The Snakes of the Philippine Islands

EDWARD HARRISON TAYLOR

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The Snakes of the Philippine Islands

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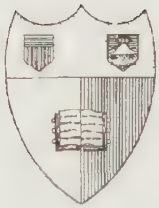

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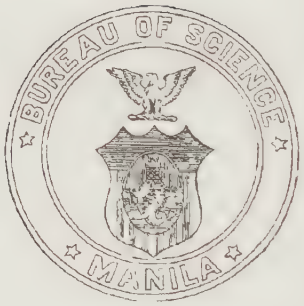
THE SNAKES OF THE PHILIPPINE ISLANDS

BY

EDWARD H TAYLOR



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PREFACE

This monograph is the result of a careful study of about three thousand specimens of Philippine snakes, preserved for the most part in the collection of the Bureau of Science and in my own private collection. Through the courtesy of the directors of the Museo de Santo Tomás and El Ateneo de Manila, I was also able to make a study of numerous specimens contained in their important collections. A few specimens at Silliman Institute, Dumaguete, Oriental Negros, were examined, as well as a few in some of the private collections in Manila.

In most cases the descriptions given in this work are of normal Philippine specimens; where no specimen has been available, I have taken a description given by another author. In the definition of genera, I have drawn very largely on Boulenger.*

I have also drawn on various other authors and on my own previous papers for illustrations, and in each case credit has been duly given. Most of the original drawings here published were made by Macario Ligaya.

It has been impossible to examine all the literature treating of Philippine herpetology, but many works are included in the synonymies which I have been unable to examine.

It is a matter for regret that I have not had access to European herpetological collections from the Philippines. For the most part, collections in European institutions were studied and reported on before the appearance of Boulenger's work, and in consequence the identifications are frequently incorrect or untrustworthy. However, the necessity for an examination of the European collections has been largely obviated by Boulenger's admirable work† I have examined various collections in America.

As companion volumes to The Snakes of the Philippine Islands I have prepared The Lizards of the Philippine Islands and Amphibians and Turtles of the Philippine Islands. It is expected that the three volumes will be published at about the same time.

EDWARD H. TAYLOR

MANILA, P. I., *July 4, 1919.*

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* Cat. Snakes Brit. Mus. 1–3 (1894–1896).

† Op. cit.

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THE SNAKES OF THE PHILIPPINE ISLANDS

By Edward H Taylor

INTRODUCTION

Since American occupation in 1898, a few notable herpetological collections have been made in the Philippines, which have resulted in the discovery of several species new to science and of others heretofore unknown for the Islands The collections in the Bureau of Science were enriched by the work of H. M. Weber and W Schultze in Palawan, of C Canonizado in Polillo, and of Lawrence E Griffin in Mindoro, Palawan, Bantayan, and Luzon Since 1912 I have collected extensively in central eastern Mindanao, Negros, Mindoro, Palawan, Busuanga, Lubang, Sulu Archipelago, and Luzon

Dr. Lawrence E. Griffin during his stay in the Islands made a preliminary study of the collection in the Bureau of Science and later published four papers. One of these describes two new species of snakes from Negros, one gives a list of Palawan snakes, another gives a list of snakes from Polillo, and the fourth is a checklist and key to all known Philippine snakes.

The results of my collecting in Negros and in Sulu are incorporated in two short papers treating of the reptilian faunas of those localities. Another paper treats of the genus *Holarchus* and describes two new species. A fourth paper * includes descriptions of several new snakes from various Philippine localities In the present monograph the following supposedly new species and subspecies are described

Typhlops dendrophis
Typhlops mindanensis
Calamaria suluensis.
Calamaria tropica.
Boiga dendrophila divergens.
Dryophis griseus.
Dryophis preocularis
Hemibungarus meclungi.
Naja naja philippinensis

In spite of a rather thorough exploration of some parts of the Islands herpetologically, large areas are comparatively unknown Thus, I have not a single authentic record for Bohol or for Marinduque, and very few for Cebu, Masbate, Leyte, Panay, and

* Philip. Journ Sci 14 (1919) 105–125

Catanduanes The fauna of the interior of Mindoro is practically unknown, as are also the faunas of high mountains everywhere in the Islands Undoubtedly many new species and subspecies await discovery

Species that occur in various islands may show variations which in many cases are small but constant. Thus it is frequently possible to state the locality from which a specimen comes by mere examination. Such variations may consist of a higher or a lower average of ventrals or subcaudals, a difference in marking or color; or in the proportions or the relations of the various head scales Undoubtedly larger collections will permit the naming of numerous subspecies. Not infrequently we find that the variations in various species belonging to different genera, or even families and orders, may have the same trend, that is, there may be an increase or a reduction in the number of ventrals, or of the scale rows, or of loreals, or there may be curious anomalies in scale formation.

This is of course to be expected, since the same environmental conditions of food, temperature, rainfall, elevation, nature of soil, etc., might easily bring about related changes in the fauna of a particular locality Certainly a study of these interrelated variations on various islands would do much to solve, beyond question, the part environment plays in the bringing about of a new species, which in my own opinion is certainly no small one

HISTORICAL

Some of the earliest writers on the Philippines have left records of snakes—records which are for the most part native stories or superstitions, but at all events interesting

Antonio de Morga * writes in 1609:

> The forests and settlements have many serpents, of various colors, which are generally larger than those of Castilla Some have been seen in the forests of unusual size, and wonderful to behold. The most harmful are certain slender snakes, of less than one vara in length, which dart down upon passersby from the trees (where they generally hang), and sting them, their venom is so powerful that within twenty-four hours the person dies raving

The large snakes are doubtless *Python reticulatus*, the slender snakes might refer to any or all of several species

Diego de Bobadilla † writes in about 1640:

---

* Sucesos de las Islas Filipinas, by Antonio de Morga, Mexico, 1609 Translated by Blair and Robertson, The Philippine Islands 1493–1898 Cleveland, The Arthur H Clark Co 16 (1904) 93

† From Relation of the Filipinas Islands, by Diego de Bobadilla, S J , 1640, in Blair and Robertson, op cit 29 (1905) 301

There are many snakes in those islands, which are very dangerous, some of them, when they have young, attack people.[108] The bite of those called *omodro* is very dangerous, and those who are bitten by it do not live one-half day. It is from that effect that it derives its name, for *odro* signifies one-half day. There is another very large snake called *saua*. I have killed one of that species which was two and one-half brazas long. The skin of another, which measured thirty-two [Spanish] feet in length, was brought to our residence at Manila. The sauas hang to the branches of trees along the roads, whence they dart down upon people, or deer, or on any other prey. They wind themselves three or four times around the body, and after having broken the creature's bones devour it. But God has provided a number of herbs in those islands which are used as antidotes to all kinds of poisons. Roots and herbs are found in the mountains, which are so many specific remedies against snake-bites, the chief ones are *manongal, manambo, logab, boroctongon, maglingab, ordag, balocas, bonas, bahay, igluhat, dalogdogan, mantala*.

John Francis Gemelli Careri writes: *

There are Snakes of a prodigous Bigness. One sort of them call'd *Ibitin* which are very long, hang themselves by the Tail down from the Body of a Tree, expecting Deer, wild Boars, or Men to pass by, to draw them to them with their Breath, and swallow them whole, and then winds it self round a Tree to digest them. Some *Spaniards* told me, *The only Defence against them was to break the Air between the Man and the Serpent*, and this seems rational, for by that means, those Magnetick or attracting Particles spread in that distance are dispers'd. Another sort of Snake call'd *Assagua* eats nothing but Hens. That they call *Olopong*, is Venomous. The biggest are called *Bobes*, which sometimes are 20 or 30 Spans long.

Another sort of four footed Creature, which is also found in *America*, and devours Hens, is call'd *Iguana*. It is like an *Alligator*, the Skin Purple, speckled with Yellow Spots, the Tongue Cloven, but the Feet close and with Claws. Tho' a Land Creature, it passes over Rivers swiftly. The *Indians* and some *Spaniards* eat it, and say it tasts like a *Tortoise*.

Juan de Plascencia † writing in 1589 of the witch doctors says:

The second they called *mangagauay*, or witches, who deceived by pretending to heal the sick. These priests even induced maladies by their charms, which in proportion to the strength and efficacy of the witchcraft,

[108] For a treatise on the snakes and poisonous animals of the Philippines, see Delgado's *Historia*, pp. 889–907. He describes the *omodro* as the *odto* (*Hemibungarus collaris*)—from the word meaning "half-day" or "noon," and given to it because the bite proves fatal if given at noon, but at no other time. It is of various colors and very furious at the hour of noon. The saua (*Python reticulatus*) is the largest snake of the islands and is often domesticated, and is not poisonous to man. [Footnote in Blair and Robertson.]

* A voyage round the world; in A Collection of Voyages. London, 4 (1704), 454.

† Customs of the Tagalogs (two relations by Juan de Plascencia, O. S. F.). Manila, october 21, from Blair and Roberston, op. cit., 7 (1903), 192.

are capable of causing death In this way, if they wished to kill at once they did so, or they could prolong life for a year by binding to the waist a live serpent, which was believed to be the devil, or at least his substance This office was general throughout the land

An Englishman writing in 1819–1822 * says:

Their serpents, however, attain an enormous size the largest are those of the Boa species (Constrictor), and will devour a horse or a cow at a meal † Of this genus there is one variety very beautifully marked which frequents the houses, and is called by the Spaniards (Culebra casera), the house snake,[24] and by the Indians "Sawa" These are often seen from 10 to 12 feet in length, but are very harmless Few houses are without one or more of them in the cellars, stables &c but they are seldom disturbed, as they are *said* to devour rats and other noxious animals, though, when these fail them, they attack fowls or even goats They form a favourite article of food with the Chinese, who keep them in jars to fatten, and the Indians may be often seen carrying them through the streets for sale

Of other varieties they have great numbers; some of which, as the "dahun-palay" or *leaf of rice*, of a deep green and yellow, which frequents the rice fields, and the "mandadalag," or whip-snake, are excessively venomous accidents from these animals are not however, very frequent, from whence it may be concluded, that the superstition of the natives has greatly exaggerated the number of venomous ones

Aduarte ‡ writing in 1690 says

When he (Fray Juan Naya) was living in the district of Ytabes in a village of that province named Tuao he was once burying a dead man in the cemetery when a venomous snake came out from the grass and, amid the noise and alarm of the people, entered between his leg and his breeches—which was an easy thing for the snake to do, since these garments are worn loose in this province, and resemble *polainas*[25] Although the Indians, who knew how poisonous the snake was, cried out and gave him over for dead, father Fray Juan continued with the act which he was performing, because of his duty as a religious, until he had finished burying the Indian and then, putting his hand in his breeches, he caught the snake by the neck and drew it out and threw it away, without receiving any harm from it

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* Remarks on the Philippine Islands and on their capital Manila, 1819–1822 By an Englishman From Blair and Robertson, op cit 51 (1907) 142

† It is said by the Indians [Footnote in Blair and Robertson]

[24] Perhaps Boa hortulana? [Footnote in Blair and Robertson]

‡ Historia de la Provincia del Santo Rosario de la Orden de Predicadores, by Diego Aduarte, O P translated by Blair and Robertson, op cit 32 (1905) 107, 108

[25] A sort of trousers, generally made of cloth, covering the legs as far as the knees, buttoned or hooked together on the outside It has also a dust-guard which extends to the shoe It is mainly used by laborers, carriers and the like (Dominguez's Diccionario Nacional) [Footnote in Blair and Robertson]

Father Mastrili,* speaking of the capture of the Sultan's palace in Mindanao in 1636, says.

> What we saw when we came to take out this throne certainly surprised us; for, before we reached the fire, two most venomous serpents came out from the feet of the chair, terrifying the soldiers greatly And truly, nothing other than serpents and poison ought to guard the chair of the great devil of Mindanao

Antonio Mozo † writes in 1763:

> Among these [remedies] are the gall and fat of the python (called *saua* and *bitug*, in various dialects) and another similar species of serpent, which reach an enormous size in the forests of the interior The gall is used both internally and externally by the natives, to cure chills and pains in the stomach—to which they are especially liable from going barefooted, and more or less naked, through mud and rain at all times, also for malignant fevers and any inflammation which causes them * * * The fat of these serpents is equally efficient for swellings or pains in the muscles and sinews, especially those caused by chills and exposure to weather

I do not know who made the earliest herpetological collection in the Philippines, but as early as 1829 Eschscholtz in his Zoological Atlas describes a sea turtle, *Chelonia olivacea*, from Manila Bay, and a large lizard, *Hydrosaurus pustulosus*, the species commonly known as *ibid* or *balubid* in the Philippines

In 1835 Wiegmann ‡ described a new snake, *Elaps calligaster*, together with the lizards *Peropus mutilatus* and *Draco spilopterus*, and *Varanus salvator* is recorded as occurring in the Islands This collection was made by F J F Meyen

Schlegel ‖ must have had some Philippine material at hand in 1837 since he described in that year *Hemibungarus collaris*, a rare Philippine snake.

Hugh Cuming began his collecting in the Philippine Islands in 1836 and continued until 1840. He obtained about thirty-seven species of snakes and about twenty-nine species of lizards From that time down to 1898 a number of important collections were made by the following men or expeditions Wilkes Exploring expedition (1838–1842); expedition of the Astrolobe and Zélée, Friederich Jagor (1859–1861), Karl Semper (1858–1866); Adolph B Meyer (1870–1873), A Everett, John White-

* Letter from Father Marcelo Francisco Mastrili to Father Juan de Zalazar, translated in Blair and Robertson, op cit 27 (1905) 269

† Noticia histórico natural, translated by Blair and Robertson, op cit 48 (1907) 120

‡ Nova Acta Acad Leop-Carol (1835) 253, pl 25, fig 2

‖ Phys Serp 2 (1837)

head (1885 and 1890–1896); Von Moellendorf and Otto Koch (1886–1905), A Schadenberg (1892").

Since American occupation several important collections have been made Those of Maj Edgar A. Mearns, Maj. T M J. Partello, Dr. J. B Steere, and Dr. J C Thompson have found their way into American museums Those made by C. M. Weber, Willie Schultze, Richard C McGregor, and Lawrence E Griffin are contained in the Bureau of Science collections

My own collection on which the bulk of this work is founded was made during 1912 to 1916. Specimens taken in 1917 to 1919 are in the Bureau of Science collections

The collections in the University of Santo Tomás Museum and in El Ateneo de Manila date back for many years and were probably made by the numerous students in those institutions.

BIBLIOGRAPHY OF PHILIPPINE SNAKES

Only such titles as have a direct value in the systematic study of the Philippine forms have been included. A number of other works contain references to Philippine snakes, but most of these omitted works have no original systematic data

BARBOUR, THOMAS A contribution to the zoogeography of the East Indian Islands Mem Mus Comp Zool Harvard College 44 (1912) 1–203, 8 pls

A splendid piece of work on faunal relationships of the Malay Archipelago and the East Indian islands, with an annotated list of herpetological specimens collected or studied There is appended a long series of tables of distribution which include species known to this territory From the Philippines are listed 21 frogs, 18 lizards, 26 snakes, 1 turtle, and 1 crocodile

Of the snakes, *Bungarus fasciatus* Schneider and *Trimeresurus sumatranus* Raffles are given in the tables as occurring in the Philippine Islands The inclusion of the former species is probably an error, the latter is probably synonymous with *T schultzei* Griffin

BOETTGER, OSKAR Aufzahlung der von den Philippinen bekannten Reptilien und Batrachier Ber Senck Nat Ges. (1886) 91–134

This paper, which as its title states is a check list of the turtles, crocodiles, lizards, snakes, and frogs, lists the following Turtles, 5 species belonging to 5 genera and 3 families. Crocodiles, 2 species belonging to 1 genus and 1 family; Lizards, 48 species (including 2 subspecies) belonging to 18 genera and 4 families; Snakes, 85 species belonging to 40 genera and 18 families Many of the species of snakes are incorrectly included in the list, and many are represented under more than one name The work is merely a compilation from the works of other authors

BOETTGER, OSKAR Katalog der Reptilien-Sammlung im Museum der Senckenbergischen Naturforschenden Gesellschaft in Frankfurt am Main, I Theil (Rhynchocephalen, Schildkroten, Krokodile, Eidechsen, Chamæleons) Frankfurt am Main (1893).

A few Philippine specimens are listed

BOETTGER, OSKAR Ueber aussere Geschlechtscharactere bei den Seeschlangen Zool Anz 11 (1888) 395–398

Variations in three species of Philippine sea snakes are discussed. Eight species are listed from the Philippines

BOETTGER, OSKAR Neue Reptilien und Batrachier von den Philippinen Zool Anz 20 (1897) 161–166

Lepidodactylus brevipes from Samar, and *Lygosoma* (*Homolepida*) *moellendorffi* (= *Sphenomorphus moellendorffi* Boettger) from Tablas are the new lizards described Two new snakes, *Typhlops ruber* and *Ablabes philippinus* (= *Liopeltis philippinus*), and a frog, *Calophrynus acutirostris* (= *Kalophrynus acutirostris*), are also described

BOETTGER, OSKAR Ber Senck Nat Ges (1889) 26, lists a collection of reptiles from the Philippines collected by Moellendorff *Fordonia unicolor* Gray is reported for the first time from the Philippines

Idem, ibid (1890) lxiii, lists a collection of reptiles and batrachians from Leyte, Philippine Islands.

Idem, ibid (1892) xlix, lists Philippine snakes, with one record for Catanduanes of *Dipsas angulata* Peters (= *Boiga angulata* Peters)

Idem, ibid (1893) xxix, lists a collection of reptiles from Manila

Idem, ibid (1897) lv, lists a collection from Manila, Cebu, Samar, and Culion *Lycodon aulicus capucina* Boie is listed from Cebu

Idem, ibid (1898) xxxvm, lists 5 specimens of *Disteira cyanocincta* from Lake Taal, Luzon

Idem, ibid (1905) 170, lists a collection from the Philippines, including 14 specimens of *Disteira cyanocincta* from Lake Taal

Idem, ibid (1906) 115, lists a few Philippine snakes

BOIE. Isis (1827) 535, describes *Tropidonotus spilogaster* (= *Natrix spilogaster*)

BOULENGER, GEORGE ALBERT. Catalogue of the Snakes in the British Museum of Natural History London 1 (1893) i–xii + 1–448, pls 1–28; 2 (1894) i–xi + 1–382, pls 1–20, 3 (1896) i–xiv + 1–727, pls 1–25

In vol 1 *Stegonotus dunerili* is renamed and drawings are given of the following *Typhlops cumingii* Gray, *Tropidonotus auriculatus* (= *Natrix auriculata* Gunther); *Oxyrhabdium leporinum* Gunther; *Zaocys luzonensis* Gunther In vol 2 drawings are given of *Oligodon modestus* Gunther, *Calamaria everetti*, and *Typhlogeophis brevis* Gunther In vol. 3 *Hurria microlepis* and *Dryophiops philippina* are described Drawings are given of these two species and of *Lachesis flavomaculatus* Gray Many Philippine species are listed and described throughout the work.

BOULENGER, GEORGE ALBERT On the herpetological fauna of Palawan and Balabac Ann. & Mag Nat Hist VI 14 (1894) 81–90

There are listed 1 turtle, 7 lizards, 16 snakes, and 13 frogs *Polyodontophis bivittatus* is described as new. *Trimeresurus formosus* Schlegel and *Trimesurus subannulatus* Gray are listed *Rana palavanensis*, *Rana varians*, *Rhacophorus everetti*, and *Ixalus longicrus* are described as new Of the 37 species named, 14 are listed from Balabac The following snakes are also listed:

Tropidonotus spilogaster Boie (= *Natrix spilogaster* Boie)

Tropidonotus chrysargus Schlegel (= *Natrix chrysargus* Schlegel)

Coluber erythrurus (= *Elaphe philippina* Griffin)
Coluber oxycephalus Boie (= *Gonyosoma oxycephala* Boie)
Dendrophis pictus Gmelin
Dipsas dendrophila Schlegel (= *Boiga dendrophila multicincta* Boulenger)
Psammodynastes pulverulentus Boie
Cerberus rhynchops Schneider (= *Hurria rhynchops* Schneider)
Naia tripudians Merrem (= *Naja naja mollepis* Boulenger)
Ademophis bilineatus Peters (= *Doliophis bilineatus* Peters)
Amblycephalus boa Boie (= *Haplopeltura boa* Boie)
Trimeresurus formosus Schlegel (= *Trimeresurus schultzei* Griffin).
Trimesurus subannulatus Gray (= ? *Trimeresurus wagleri wagleri* Boie)

BOULENGER GEORGE ALBERT A catalogue of the reptiles and batrachians of Celebes with special reference to the collections made by Drs P & F Sarasin in 1893–1896 Proc Zool Soc London (1897) 193–237, pls 7–11

A list is given of species occurring in the Philippines that are also common to Celebes A discussion of the faunal relations is added

BOULENGER, GEORGE ALBERT Description of two new snakes of the genus Calamaria Ann & Mag Nat Hist VI 16 (1895) 481

Calamaria mindorensis from the Everett collection is described from Mindoro

CASTO DE ELERA Catálogo sistemático de toda la fauna de Filipinas conocida hasta el presente, y á la vez el de la colección zoológica del Museo de PP Dominicos del Colegio-Universidad de Sto Tomás de Manila, escrito con motivo de la exposición regional Filipina Manila, Imprenta del Colegio de Santo Tomás (1895–1896) 3 vols

Volume 1 (1895), Vertebrados, devotes pages 399 to 454 to a list of the crocodilians, batrachians, turtles, lizards, and snakes Among the species of snakes listed a great many records have not been authenticated It is not improbable that Casto de Elera had before him a collection of snakes from southern Asia, or other extra-Philippine localities, which purported to come from the Philippine Islands At the present time, however, there are no foreign snakes in the collections of the University of Santo Tomás

CATANJAL, ANDRES Report on the poisonous snakes in the Philippines, pp 1–45 [Manuscript] An interesting work prepared for the Philippine Bureau of Health Contains pertinent data on deaths caused from the bites of poisonous snakes It gives a list of native names of snakes supposedly poisonous, and records various real or superstitious medicines and cures

COPE, EDWARD DRINKER Proc Acad Nat Sci Philadelphia (1860) 244, 245

Simotes phaeochalmus (= *Holarchus ancorus* Girard) and *Simotes aphanospilus* (= *Holarchus ancorus* Girard) are described as new A few other Philippine snakes are listed

DUMÉRIL, A. M C, and BIBRON, G Erpétologie général ou histoire naturelle complète des reptiles (1834–1854) 9 vols

Volume 7 contains the following original descriptions *Calamaria gervaisii*, p 76, *Lycodon mulleri* (= *Stegonotus muelleri* Duméril

and Bibron) p 382, *Stenognathus modestus* (= *Oxyrhabdium modestum* Duméril and Bibron) p 503, *Leptophis vertebralis* (=?) p 548 *Leptophis vertebralis*, if from the Philippines is probably a species of *Natrix* Their specimen of *Campylodon prevostianum*, p 964 probably originated in southern India and not in Manila*

FISCHER, J G A list of reptiles and batrachians of Mindanao Jahrb wiss Anst Hamburg 2 (1885) 80 pls

Geophis schadenbergi (= *Oxyrhabdium modestum* Duméril and Bibron) and *Trimeresurus schadenbergi* (= *Trimeresurus flavomaculatus* Gray) are described as new Twenty-one other species are listed from southern Mindanao *Geophis schadenbergi* is figured, pl 3, fig. 4

GARMAN, SAMUEL New and little-known reptiles and fishes in the museum collections Bull Mus Comp Zool Harvard Coll 8 (1881) 85–93

Hydrophis semperi is described as a new species from "Lake Taal, Luzon Island, Philippines" from a specimen collected by Dr Carl Semper Boulenger recognizes this as a distinct species

GIRARD, CHARLES Proc Acad Nat Sci Philadelphia (1857) 196

Describes the lizard *Leiolopisma vulcania* under the name *Lepima vulcania*, and *Holarchus ancorus* under the name *Xenodon ancorus*

GIRARD, CHARLES United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U S N, Vol XX, Herpetology. With folio Atlas Philadelphia, J B Lippincott and Co (1858) i–xvii and 1–496

Lists 2 frogs, 1 snake, and 5 lizards from the Philippines The snake is *Xenodon ancorus* Girard (= *Holarchus ancorus* Girard)

GOGORZA Y GONZALES, JOSÉ D Datos para la fauna Filipina, Vertebrados, Madrid, Imprenta de Fortaner (1888) 57 pages Extract from Anal de la Soc Esp de Hist. Nat 17 (1888)

This paper lists 87 reptiles and 10 amphibians Pages 30 to 34 give a list of 51 Philippine snakes in the Museo de Ciencias Naturales de Madrid Fourteen of these are referred only to the genera A species is referred to the genus *Aspidura* from Angat, Bulacan This is an error, as the genus is confined to Ceylon Another species is referred to *Oxybelis*, a genus confined to South America The following species if correctly identified probably did not originate in the Philippines *Calamaria vermiformis* Duméril and Bibron, *Coryphodon kopros* Reinwardt, *Tragops nasutus* Wagler, *Dipsas dispeza* Duméril and Bibron, and *Hydrophis schistosus* Daudin The list is obviously rather untrustworthy

GRAY, JOHN EDWARD. Zool Miscellany (1842) 48 to 50

Describes *Megæra flavomaculatus*, *Megæra ornata*, *Megæra variegata*, *Trimesurus subannulatus*, and *Trimesurus philippensis*

The first three species are referred to *Trimeresurus flavomaculatus* Gray; *Trimesurus subannulatus*, to *Trimeresurus wagleri* The specimens are from the Cuming Philippine collection, the exact localities are not given.

GRAY, JOHN EDWARD Ann & Mag Nat Hist 11 (1843) 46

Describes *Lapemis loreata* (= *Lapemis hardwickii* Gray)

* See Boulenger, Fauna Brit India, Rept (1890) 380

GRAY, JOHN EDWARD Catalogue of Lizards in the British Museum London (1854)

The following species of snakes are described as new from the Philippines *Argyrophis truncatus* GRAY (= *Typhlops braminus* Daudin), *Typhlops ruficauda* GRAY (= *Typhlops ruficauda* Gray), *Onychophis olivaceus* Gray (= *Typhlops olivaceus* Gray), *Onychophis cumingii* Gray (= *Typhlops cumingii* Gray) These species are founded on specimens in the Cuming collection from the Philippines

GRAY, JOHN EDWARD Catalogue of Viperine Snakes in the British Museum (1849)

Records *Parias flavomaculatus* Gray, *Parias ornatus* Gray, *Parias variegata* Gray, and *Trimesurus philippensis* Gray, on pages 9 and 10

GRIFFIN, LAWRENCE E Two new species of snakes found in the Philippine Islands Philip Journ Sci § A 4 (1909) 55, 56

Dendrelaphis caeruleatus and *D fuliginosus* are described as new These forms are probably synonymous with *D terrificus* and *D modestus*, respectively

GRIFFIN, LAWRENCE E A list of snakes found in Palawan Philip Journ Sci § A 4 (1909) 595–601

Dryocalamus philippinus, *Elaphe philippina*, *Oligodon waltigensis*, and *Trimeresurus schultzei* are described as new The first records for the Philippines for *Liopeltis tricolor* Schlegel and *Trimeresurus gramineus* are included I question the correctness of the latter record Thirty-two species and 2 subspecies are listed, based on the collection of Everett (studied by Boulenger), and those of H M Weber and W Schultze which are now in the Bureau of Science collection

GRIFFIN, LAWRENCE E A list of snakes from the Island of Polillo, P I, with descriptions of a new genus and two new species Philip Journ Sc. § D 5 (1910) 211–218. pl 1, 1 text fig

Haplonodon is the new genus, with *H philippinensis* as its type *Trimeresurus halicus* is also described as new Fourteen other species are listed

GRIFFIN, LAWRENCE E A check-list and key of Philippine snakes Philip Journ Sci § D 6 (1911) 253–268

Lists 94 species and subspecies of snakes, based largely on the Philippine Bureau of Science collection *Xenopeltis unicolor* Reinwardt and *Zaocys carinatus* Gunther are reported for the first time from the Philippines The following species are eliminated from Griffin's checklist or their nomenclature changed by the present work

Holarchus octolineatus (Schneider) Philippine snakes referred to this species should probably be *Holarchus meyerinkii*

Holarchus phænochalinus (Cope) (= *H ancorus* Girard)

Dendrophis punctulata (Gray), included apparently only on the record of Parenti and Piraglia which appears to be incorrect

Elaphe oxycephala (Boie) (= *Gonyosoma oxycephala* Boie)

Ablabes tricolor (Schlegel) (= *Liopeltis tricolor*)

Ablabes philippina (= *Liopeltis philippina*)

Dendrelaphis caeruleatus Griffin (= ?*D terrificus* Peters)

Dendrelaphis fuliginosus Griffin (= ?*D modestus* Boulenger)

Gerardia prevostiana (Eydoux et Gervaise), included by Griffin on Duméril and Bibron's record which appears incorrect)

Naja naja cæca (Gmelin) (= *N. n. philippinensis*)
Trimeresurus sumatranus (Raffles) (= *T. schultzei* Griffin)

GUICHENOT, A. In Dumont d' Urville Voyage Pôle Sud et Oceanie, Zool., Rept. (1853)

Describes *Tropidolæmus hombroni* (= *Trimeresurus philippensis* Gray) p. 23, pl. 2, fig. 2, from Zamboanga

GUNTHER, ALBERT Catalogue of Colubrine Snakes in the Collection of the British Museum, London (1858) i–xvi + 1–281

A new genus, *Hologerrhum*, with the type *Hologerrhum philippinum*, is described. The following species are described as new from the Philippines: *Calamaria grayi*, *Rhabdosoma leporinum* (= *Oxyrhabdium leporinum*), *Rhabdosoma oxycephalum* (= *Pseudorhabdium oxycephalum*). The following species are listed from the Philippines:

Calamaria gervaisii Duméril and Bibron
Calamaria lumbricoidea part (= *Calamaria grayi* Gunther)
Simotes purpurascens Schlegel var. C. (= *Holarchus ancorus* Girard)
Tropidonotus spilogaster Boie (= *Natrix spilogaster* Boie)
Tropidonotus chrysargus (= *Natrix chrysargus* Boie)
Elaphis subradiatus Schlegel (= *Elaphe erythrurus* Duméril and Bibron).
Spilotes melanurus Schlegel (= *Elaphe philippina* and *erythrurus*)
Gonyosoma oxycephalum Reinwardt
Psammodynastes pulverulentus Boie
Chrysopelea ornata Shaw
Dendrophis pictus Gmelin
Chrysopelea rubescens Gray (= *Dryophiops philippina* Boulenger)
Dendrophis punctulata (= *Dendrelaphis terrificus* Peters)
Dryophis prasina Reinwardt
Eudipsas cynodon Cuvier (= *Boiga cynodon* Cuvier)
Dipsas dendrophila (= *Boiga dendrophila*)
Amblycephalus boa Kuhl (= *Haplopeltura boa* Kuhl)
Lycodon aulicus Linnæus (= *Ophites aulicus* Linnæus)
Lycodon mulleri Duméril and Bibron (= *Stegonotus dumerili* Boulenger)
Cyclocorus lineatus Reinhardt
Hamadryas elaps Schlegel (= *Naja hannah* Cantor)
Naja tripudians var. F. Merrem (= *Naja naja samarensis* Peters)
Elaps calligaster Wiegmann (= *Hemibungarus calligaster* Wiegmann)
Elaps intestinalis var. (= *Doliophis philippinus* Gunther)
Platurus laticaudatus (= *Laticauda colubrina* Schneider)

These identifications refer only to Philippine records.

GUNTHER, ALBERT On the genus Elaps Wagler. Proc. Zool. Soc. London (1859) 79–89

Callophis intestinalis Laurenti var. A (= *Doliophis philippinus* Gunther) is figured and described.

GUNTHER, ALBERT The reptiles of British India. London (1864) i–xxvii + 1–452, pls. 1–26

An extensive treatise on the reptiles of India and southern Asia. *Oligodon modestus* is described as new from the Philippines. The

following are attributed to the Philippines, and a few other forms are mentioned as occurring in the Philippines

Ophiophagus elaps (= *Naja hannah* Cantor).
Cheirydrus granulatus.
Dipsas cynodon (= *Boiga cynodon* Cuvier)
Hydrophis loreata Gray (= *Lapemis hardwickii* Gray)
Coluber intestinalis philippina Gunther (= *Dolichus philippinus* Gunther)

GUNTHER, ALBERT Notes on some reptiles and batrachians obtained by Dr Adolph Bernhard Meyer in Celebes and the Philippine Islands. Proc Zool Soc London (1878) 165–172, pls 17, 18

Ten Philippine lizards are listed, with copious notes A drawing of the head of *Sphenomorphus jagori* Peters is given under the name *Humla variegata* The snakes *Oligodon notospilus* from Mindanao and *Zaocys luzonensis* from Luzon are described as new *Hologerrhum philippinum* Gunther and *Oligodon notospilus* are figured by complete drawings, and *Pseudorhabdium oxycepholum* Gunther by three text figures under the name *Oxycalamus oxycephalus*. Six snakes are listed

GUNTHER, ALBERT List of the mammals, reptiles, and batrachians sent by Mr Everett from the Philippine Islands Proc Zool Soc London (1879) 74–79, pl 4

Lists 1 tortoise, 1 crocodile, 20 lizards, 17 snakes, and 7 frogs. A new genus of snakes, *Typhlogeophis*, is described, with *T brevis* as the type *Dendrophis philippinensis* is described as new, this is *Dendrelaphis terrificus* Peters A good drawing is given of this species The type locality of both these species is northern Mindanao (possibly Dinagat in the case of the former species) The other species reported are

Calamaria gervaisii Dumeril and Bibron
Rhabdosoma modestum Duméril and Bibron (= *Oxyrhabdium modestum* Duméril and Bibron)
Oligodon modestus Gunther
Odontomus muelleri Duméril and Bibron (= *Stegonotus muelleri* Duméril and Bibron)
Spilotes melanurus Schlegel (= *Elaphe erythrurus* Dumeril and Bibron)
Tragops prasinus Reinwardt (= *Dryophis* sp)
Dipsas dendrophila Reinwardt (= *Boiga dendrophila latifasciata* Boulenger)
Dipsas cynodon Cuvier (= *Boiga cynodon* Cuvier)
Hologerrhum philippinum Gunther
Psammodynastes pulverulentus Boie
Lycodon aulicus Linnæus (= *Ophites aulicus* Linnæus)
Cerberus rhynchops Schneider (= *Hurria rynchops* Schneider)
Naja tripudians (= ? *Naja naja philippinensis* subsp nov)
Trimeresurus wagleri Schlegel
Trimeresurus flavomaculatus Gray

Most of these species are from northeastern Mindanao, and from Dinagat, a few are from Negros and Leyte.

GUNTHER, ALBERT Descriptions of two snakes from the "Challenger" collections Ann & Mag Nat Hist V 11 (1883) 136, fig.

Tropidonotus dendrophiops (= *Natrix dendrophiops* Günther) is described from Zamboanga, Mindanao

JAN, G Elenco sistematico, degli Ofidi Milan (1863)

The following species are described or listed from the Philippines

Lycodon tessellatus (= *Ophites tessellatus* Jan)

Hydrophis abbreviatus and *Hydrophis brevis* (= *Lapemis hardwickii* Gray)

Hydrophis westermanni (= *Distira cyanocincta* Daudin)

Tropidonotus spilogaster Boie (= *Natrix spilogaster* Boie)

Composoma melanurum (= *Elaphe erythrurus* Duméril and Bibron)

JAN, G Iconographie general des ofidiens Milan (1860–1881)

Livr 10 (1865), pl 2, fig 1, *Calamaria gervaisii*

Livr 21 (1867), pl 4, fig 2, *Composoma melanurum manillensis* (= *Elaphe erythrurus* Duméril and Bibron)

Livr 27 (1868), pl 2, fig 1, *Natrix spilogaster* Boie

Livr 30 (1868), pl 6, fig 3, *Campylodon prevostianum* Duméril and Bibron (= *Gerardia prevostianum* Duméril and Bibron).

Livr 36 (1870), *Lycodon tessellatus* (= *Ophites tessellatus* Jan).

Livr 39 (1872), pl 5, fig 1, *Hydrophis westermanni* (= *Distira cyanocincta* Daudin)

Livr 41 (1872), *Hydrophis nigrocinctus* (= *Distira spiralis* Shaw)

MEYER, A B Mon Berl Ak (1869)

Hemibungarus calligaster is listed from the Philippines

MEYER, A B Sitzb Akad Berl (1886)

Ademiophis philippinus is described on page 614

MULLER, F Katalog der Herpetologischen Sammlung des Basler Museums (1878) I Nachtrag Catalog der Herpetologischen Sammlung des Basler Museums (1880). II Nachtrag Cat Herp Samml Basler Mus (1882). III. Nachtrag Cat Herp Samml Basler Mus 1883 IV Nachtrag Cat Herp Samml Basler Mus (1885)

In the catalogue and the various supplements a few species of Philippine reptiles are given Most of the Philippine specimens are listed in the third supplement

MULLER, F Verh Nat Ges Basel 17 (1883)

Callophis germanulus (= *Hemibungarus calligaster* Wiegmann) is described on page 289

PARENTI, P, and PICAGLIA, L Rettili ed anfibi raccolti da P Parenti nel viaggio di circumnavigazione della r corvetta "Vettor Pisani" negli anni 1882–85, e da V Ragazzi sulle coste del mar rosso e dell' America meridionale negli anni 1879–84 Atti Soc Nat Modena, Mem Orig III 5 (1886) 1–96

This paper lists a number of reptiles from Ticao Island Many of the identifications are very untrustworthy. The following species are listed

Hemidactylus frenatus Duméril and Bibron

Spathoscalabotes mutilatus Gunther (= ? *Hemiphyllodactylus insularis* Taylor)

Lophura amboinensis Schlosser

Gecko japonicus (= ?)

Monitor chlorostigma (= ?)

Dendrophis punctulata Gray (= ?).

Dendrophis terrificus Peters

Dendrophis octolineata (= *Dendrelaphis terrificus* Peters).
Rhacophorus maculatus Gray (= *Polypedates leucomystax* Gravenhorst)

PETERS, W. Report on collections of F. Jagor in Malacca, Java, Borneo, and the Philippines, second report. Mon. Berl. Ak. (1861) 683–691.

The following Philippine species are reported, mostly from southern Luzon and from Samar and Leyte.

Typhlops braminus Daudin.
Typhlops (*Amblos*) *ruficauda* Gray.
Typhlops jagori, described as new from Isarog Volcano, southern Luzon.
Onychocephalus (*Onychophis*) *olivaceus* Gray (= *Typhlops olivaceus* Gray).
Python reticulatus Schneider.
Chersydrus granulatus Schneider.
Calamaria Gervaisii Duméril and Bibron.
Stenognathus modestus Duméril and Bibron (= *Oxyrhabdium modestum* Duméril and Bibron).
Plagiodon erythrurus Duméril and Bibron (= *Elaphe erythrura* Duméril and Bibron).
Coryphoma melanurum Schlegel (= *Elaphe erythrurus* Duméril and Bibron).
Spilotes Samarensis is described as new (= *Stenognathus muelleri* Duméril and Bibron).
Tropidonotus stolatus Linnæus (= ? *Natrix stolata* Linnæus).
Tropidonotus lineatus (= *Natrix lineata* Peters) is described as new from Loquilocun, Samar.
Tropidonotus spilogaster Boie (= *Natrix spilogaster* Boie).
Tropidonotus auriculatus Gunther (= *Natrix auriculatus* Gunther).
Cerberus boaeformis Schneider (= *Hurria rhynchops* Schneider).
Psammodynastes pulverulentus Boie.
Chrysopelea ornata Boie.
Dendrophis pictus Reinwardt.
Dendrophis caudolineatus Gray (= *Dendrelaphis terrificus*) Peters.
Dryophis prasinus Reinwardt (= *Dryophis* sp. Cope ?).
Gonyosoma oxycephalum Reinwardt.
Lycodon aulicus Linnæus (= *Ophites aulicus* Linnæus).
Lycodon Muileri Duméril and Bibron (= *Stenognathus duméril* Boulenger).
Cyclocorus lineatus Reinwardt.
Dipsas (*Dipsadomorphus*) *angulata* (= *Boiga angulata*) is described as new from Leyte.
Elaps calligaster Wiegmann (= *Hemibungarus calligaster* Wiegmann).
Naja (*Hamadryas?*) *fasciata* is described as new from Samar. This is probably the young of *Naja hannah*.
Naja tripudians samarensis is described as a new variety from Samar (= *Naja naja samarensis* Peters).
Platurus fasciatus Daudin (= ? *Laticauda laticaudatus* Linnæus).
Bothrops nitida (= *Trimeresurus* sp.)

Tropidolaemus subannulatus Gray and var *maculatus* Gray (= *Trimeresurus wagleri* Boie)

Tropidolaemus Philippinensis Gray (= *Trimeresurus philippensis* Gray)

PETERS, W Herpetological notes, Mon Berl Ak (1867) 13–37.

The following snakes are listed from the Philippines *Tragops prasinus* Boie (= *Dryophis* sp), *Dipsas Philippina* (= *Boiga philippina*) (described as new from Ylaces, northwest of Luzon), *Tropidolaemus Hombroni* Guichenot (= ? *Trimesurus philippensis* Gray) These specimens were taken by Semper A few new lizards and frogs are described as new

PETERS, W Mon Berl Ak (1872) 585–587

Reports upon 3 new species of snakes, *Calamaria bitorques*, *Stenognathus brevirostris*, and *Hemibungarus gemianulus* from the Philippines *Stenognathus brevirostris* Peters (= *Oxyrhabdium leporinum* Guntheri), *Hemibungarus gemianulus* Peters (= *Hemibungarus calligaster* Wiegmann) These specimens were collected by Wallis in the Philippines, the exact localities are not recorded

PETERS, W Sitz Ber Ges Nat Freunde, Berlin (1881) 109

Callophis bilineatus (= *Doliophis bilineatus* Peters) from Palawan, is described

REINHARDT, J T Kgl Dansk Vid Afhand (1843)

Describe *Lycodon lineatus* (= *Cyclocorus lineatus* Reinhardt).

ROSARIO Y SALAS, ANACLETO DEL Los ofideos venenosos mas comunes en el pais [From a typed copy of original manuscript]

This paper was published by La Real Sociedad Económica de Amigos del Pais in Manila It contains a juvenile attempt at a classification of Philippine snakes, and gives certain supposed cures for snake bites

He gives the name *Furina philippinensis* to a snake known in the native dialect as *taling-bilauo* which, from the description, probably applies to *Hemibungarus calligaster* Wiegmann The description is as follows "Escamas iguales y pequeñas, gastrotegas sencillas y urostegas dobles, vientre blanco amarillento; cuerpo con fondo del mismo color y unas noventa y seis fajas negras trasversales, matizadas en su centro y por los lados por escamas amarillentas, partes laterales del cuerpo constituidas por escamitas amarillentas orilladas de negro y con rayitas longitudinales también negras y que unen el ángulo anterior con el posterior, cola delgada, larga y cónica, cabeza casi tan grande como el cuerpo con nueve placas que afectan igual disposición que las del *Dahunpalay* (Tragops Xanthozonius), ojos grandes y horizontales; hocico romo, ambos maxilares armados de numerosos dientes, los supra-maxilares anteriores sulcados pero no perforados, delgados y mas largos que los posteriores que son en número de seis a ocho por lado"*

SCHLEGEL, H Essai sur la physionomie des serpens The Hague (1837) 2 vols

Elaps collaris (= *Hemibungarus collaris* is described from the Philippines The species is figured in Schlegel, Abbild (1844) 137, pl 46, figs 10 and 11

* From the original manuscript

SEOANE, VICTOR LOPEZ Neue Boidengattung und Art von den Philippinen Abh Senck Nat Ges (1881) 12 [Author's separate, pp 1–7, pl 1]

Describes a new genus *Piesigaster* with the species *Piesigaster boettgeri* from "der Provinz Iloilo und Pollock auf der Insel Mindanao," supposedly captured there by a brother of the author, a ship's captain of the Royal Spanish Marine The specimen is *Epicrates inornatus* Reinhardt from the West Indies

STEINDACHNER, F Reise der osterreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B von Wullerstorf-Urbair Zoologischer Theil Reptilien, Wien (1867) 98 pp 3 pls, Amphibien, Wien (1867) 70 pp 5 pls

One new species *Gymnodactylus philippinicus* is described, and a few others are listed from the Philippines The following Philippine snakes are described as new *Dipsas gunaonis* (= *Boiga angulatus* Peters), *Lycodon bairdi* (= *Psammodynastes pulverulentus* Boie) Five other Philippine snakes are recorded

STEINDACHNER, F Verh Zool Bot Ges Wien (1867)

Describes *Calamaria philippinica*, p 514, pl 13, figs 4–6, and *Typhlops petersi*, p 515, pl 13, figs 7–9 The first is a synonym of *Calamaria gray* Gunther, the second is probably *Typhlops ruficauda* Gray

STEINDACHNER, F Sitzb Akad Wien c (1891)

Describes *Simotes meyerinki* (= *Holarchus meyerinki*), page 294

STEJNEGER, LEONHARD A new calamarine snake from the Philippine Islands Smithson Misc Coll (1908) 50

Describes *Calamaria micarusi* from Mindanao

TAYLOR, EDWARD H Snakes and lizards known from Negros, with descriptions of new species and new subspecies Philip Journ Sci § D 12 (1917) 353–382, 2 pls, 2 text figs

Twenty-four snakes and 24 lizards are listed Two new species and 3 new subspecies of snakes, and 4 new lizards are described

The snakes are *Typhlops canlaonensis*, *Natrix dendrophiops negrosensis*, *Pseudorabdium menamarae*, *Calamaria gervaisii videscens*, and *Trimeresurus wagleri alboviridis* All are from Mount Canlaon, in central northern Negros

TAYLOR, EDWARD H Reptiles of the Sulu Archipelago Philip Journ Sci § D 13 (1918) 233–267, 3 pls, 11 text figs

Six new lizards and 1 new snake are described in this paper The snake is *Typhlops suluensis* from Bubuan Island, Sulu Fifteen snakes are listed The following changes are necessary *Ablabes tricolor* (= *Liopeltis tricolor* Schlegel), *Elaphe erythraea* Dumeril and Bibron (= *Elaphe philippina* Griffin), *Calamaria gervaisii* Duméril and Bibron (= *Calamaria suluensis* sp nov), *Laticauda colubrina*, part, Schneider (= *Laticauda laticaudata* Linnæus)

TAYLOR, EDWARD H Two new snakes of the genus Holarchus with descriptions of other Philippine species Philip Journ Sci § D 13 (1918) 359–369, 2 pls

Two new snakes *Holarchus buckleyi* and *Holarchus maculatus*, are described as new

TAYLOR, EDWARD H New or rare Philippine reptiles Philip Journ Sci 14 (1919) 105–125, 2 pls, 2 text figs

The following species of snakes are described as new from the Philippines *Typhlops luzonensis*, *Typhlops manilæ*, *Typhlops rugosa*, *Typhlops longicauda*, and *Trimeresurus mcgregori* Four new lizards are also described

VAN DENBURGH, JOHN, and THOMPSON, J. C A new sea snake Proc Cal Acad Sci IV 3 (1908), 41–47, 1 pl

Distira cincinnata is described from Manila Bay

WIEGMANN, AREND FRIEDRICH AUGUST Lists and descriptions of Amphibia collected during the voyage Nova Acta Acad Leop-Carol. 17[1] (1835) 253, pl 25, fig 2 Reprinted in Meyen, F J F, Reise um die Erde 3 (1834–43)

Describes *Elaps calligaster* (= *Hemibungarus calligaster* Wiegmann) and *Natrix crebripunctata* From specimens collected by F. J F Meyen

El Archipielago Filipino Colección de datos geográficos, estadísticos, cronológicos y científicos, relativos al mismo entresacados de anteriores obras u obtenidos con la propia observación y estudio, por algunos Padres (Jesuitos) Washington, Imprenta del Gobierno 1 (1900) Tratado IX, Capítulo III Reptiles y Batracios

This chapter treats of the reptiles and batrachians of the Islands Several interesting notes are given on snakes *Python molurus* Gray, *Typhlops diardi*, *Typhlops ater* Schlegel, and *Uropeltis philippinus* Cuvier are wrongly attributed to the Philippines A few lizards are mentioned On the whole the account is rather untrustworthy

ECONOMIC CONSIDERATION OF SNAKES

Many of the Philippine snakes are poisonous, and many deaths result each year from snake bite Unfortunately no accurate records have been kept in the Philippines of the actual number. In 1912 Andres Catanial, a health officer of Tarlac Province, P I, prepared a work which he designated a report on the poisonous snakes in the Philippines This work, which is still in manuscript form, gives statistics of deaths caused from poisonous snakes during 1909. As these figures appear to be accurate I shall utilize his work *

TABLE 1.—*Distribution by provinces of deaths from poisonous snakes during 1909 in the Philippines*

Cagayan	3	Tarlac	6
Isabela	1	Laguna	3
Ilocos Norte	18	Batangas	13
Ilocos Sur	5	Ambos Camarines	1
La Union	2	Albay	9
Pangasinan	16	Bohol	2
Nueva Ecija	6	Misamis	1

It will be seen that 86 deaths were reported in 1909 from the fourteen provinces listed above It is impossible to believe

* For the most part it is impossible to make direct quotations from this work, but the statistical facts here set down are extracted therefrom

that these reports cover all of the deaths that actually occurred during 1909 in the provinces listed Undoubtedly many occur among the hill peoples of northern and central Luzon that are never brought to the attention of the municipal authorities

TABLE 2.—*Showing relation of deaths to density of population*[a]

Province	Deaths in 1909	Square miles	Population March 1903	Deaths per 100 000 inhabitants	Square miles for each death
Ilocos Norte	18	1,330	179 995	10 05	74 88
Pangasinan	16	1,193	397,302	4 02	71 50
Batangas	13	1 201	257 715	5 04	92 38
Albay	9	1 753	210 325	3 79	198 11
Nueva Ecija	6	2, 169	134 147	4 47	361 50
Tarlac	6	1, 205	135, 107	4 44	200 83
Ilocos Sur	5	471	187 411	2 66	94 20
Laguna	3	620	148 606	2 01	209 66
Cagayan	3	5 052	156, 239	1 92	1 684 00
La Union	2	634	137, 839	1 45	317 00
Bohol	2	1, 511	269 223	0 74	755 50
Isabela	1	5, 018	76 431	1 30	5, 018 00
Misamis	1	3, 777	175 688	0 56	3 777 00
Ambos Camarines	1	3 279	234 105	0 41	3 279 00
Total	86	29 252	2 735 029		
Average				3 14	340 00

[a] This is a combination of Tables A and B of Catanjal's work

From this table it appears that the largest number of deaths occurs in the more thickly populated districts, especially in the provinces where rice is raised to a large extent

Thus we find an average of 3 14 deaths for each 100,000 inhabitants, and an average of 1 death for each 340 square miles. By applying these percentages to the entire population and to the entire territory of the Islands, we arrive at an approximate number of deaths for the Islands

Taking the population in 1909 as 8,000,000 and the average deaths per 100.000 at 3 14, the estimate for the Islands is 251 deaths annually Based on the total area of the Islands, approximately 144.000 square miles, with one death for each 340 square miles, the larger estimate of 335 deaths is reached Since we observe from the table that the number of deaths appears to be directly increased by density of population, an estimate based on population is probably better than one based on territory.

Table 3 is a copy of Catanjal's Table E, and shows the distribution of the snakes that caused the 86 deaths reported I quote the table in full

TABLE 3.—*Deaths by poisonous snakes locally named*

Province	Alum-ag-in	Alu-pung	Cama-malu	Cara-saen	Jagua-son	Romu-ranon	Zadio-co	Ulu-pung	Un-known	Total
Cagayan	1								2	3
Isabela									1	1
Ilocos Norte				5					10	15
Ilocos Sur									5	5
La Union				2						2
Pangasinan				5			4		7	16
Nueva Ecija								6		6
Tarlac		1	2	2					1	6
Laguna									3	3
Batangas									13	13
Ambos Camarines						1				1
Albay						9				9
Bohol									2	2
Misamis					1					1
Total	1	1	2	17	1	10	4	6	44	86

It has been impossible to determine exactly from the native names the species of snakes in question here

Carasaen is the name usually applied by the Ilocanos to species of the cobra, *Naja hannah* and *Naja naja*.

Alupung and *ulupung* are Tagalog names applied to the same species, while *jaguason* is the Mindanao-Visayan name applied to *Naja naja samarensis* and possibly to other cobras. *Camamalu* * is applied to cobras in the Pampanga dialect, while *tadioco* (according to Catanjal) is used in Pangasinan to designate the same species. In the Bicol provinces the name is applied to species of *Trimeresurus*

Romuranon, according to Peters,† is applied to the species of *Trimeresurus*, while Catanjal believes it designates *Hemibungarus*, and de Elera believes it applies to *Dendrophis pictus*. I suspect that it should apply to the species of *Trimeresurus*.

It will thus be seen that certainly a very large portion of the deaths in the Islands from snake bites is caused by the cobra, particularly *Naja naja philippinensis*, which appears to be rather widespread in the Philippines

Catanjal in his work adds a long annotated list of native names, and in some cases an attempt to identify them has been made The following is a list of native names taken largely from his work. The identifications appended are my own unless otherwise stated.

* Casto de Elera, Cat Fauna Filipinas 1 (1895) 440, gives this name for *Hemibungarus calligaster* Wiegmann

† Peters, Mon Berl Ak (1861) 691

LOCAL NAMES FOR PHILIPPINE SNAKES

1 *Agnasan* (Bicol, Ambos Camarines)
2 *Aguason* (Bicol, Visayan).
3 *Aguasun* (Bicol, Visayan).

In the Bicol provinces and in certain Visayan provinces these three names are synonymous and are applied to *Boiga dendrophila* which is only a slightly poisonous snake In Samar, Leyte, and northern Mindanao a variation of this name, *jaguason*, is sometimes applied to the cobra *Naja naja samarensis*, and possibly to other cobras

4 *Ahas*, a general or class name for snake
5 *Ahas na-batu* (Nueva Ecija), probably *Python reticulatus*.
6. *Ahas-na-cuyog* (Nueva Ecija), probably *Calamaria gervaisii*, used to be found living in groups
7 *Ahas-na-tulog* (Nueva Ecija), sleeping snake, *culebra casera* (Spanish); names frequently applied to *Ophites auticus*
8 *Alibot* (Ilocano)
9 *Alimbusogan* (Bicol)
10 *Alimpoyawan* (Batangas).
11 *Alimuanin*, probably a viper, *Trimeresurus*
12 *Alindayag* (Ilocos Sur).
13. *Almoranin* (Marinduque)
14 *Alumag-in* (Cagayan and Isabela).
15 *Ambubusog* (Bicol), a name applied to *Dryophis prasinus* or other species of *Dryophis*
16 *Amorong* (Ilocano)
17 *Anamon* (Albay), said to be a species of *Trimeresurus* which is yellowish white, probably *T mcgregori*.
18 *Anga* (Pangasinan)
19 *Anipa*
20 *Anipatuleng* (Ilocano), a synonym of *anipa*, said to be a black snake.
21 *Annagabang* (Cagayan)
22 *Arayat* (synonym of *ahas-na-cuyog*), *Calamaria gervaisii*
23 *Ataybia* (Laguna)
24 *Bactan* (Surigao)
25 *Bagbag* (Palawan)
26 *Bahayon* (Surigao).
27 *Bahon* (Bohol), said to be striped yellow, red, and white
28 *Balahilo* (Batangas), said to be yellow with yellow and black spots on the abdomen.
29 *Balanaquen* (Palawan)
30 *Balibat* (Luzon), said to be black above and yellow on the abdomen, and to have two heads
31 *Balidbidan* (Palawan)
32 *Balilok* (Bicol and Visayan)
33 *Balitucan* (Ilocos Sur), said to have yellow spots on the body
34 *Banacon* (Bicol and Visayan)
35 *Banahanon* (Bicol)
36 *Bannagao* (Ilocano)
37 *Banugbuyan* (Ambos Camarines)
38 *Barasan* (Pangasinan)

39 *Bartin*
40 *Basibas*, a synonym of *palapal*
41 *Bayuyok* (Bohol)
42 *Beclat* (Ilocano).
43. *Bibyam* (Laguna), said to be red above and white below It is so named from a fresh-water eel
44 *Biclat*, *Python reticulatus*
45 *Bigabiga* (Pampanga)
46 *Bigsihan* (Bohol)
47 *Bilibidbilaw*
48 *Bintwian* (Palawan)
49 *Birtin*, *Python reticulatus*
50 *Bitin* (Pampanga, Marinduque, Panay, Negros), a name for *Python reticulatus*
51 *Boa*, a name given by Spanish-speaking people to *Python reticulatus*
52 *Borayoan* (Union)
53 *Boro-bunog* (Albay)
54 *Bugang-pikapik* (Batangas).
55 *Bugang-saldang* (Ambos Camarines)
56. *Bulacan* (Occidental Negros), *Dendrophis pictus*
57 *Buoyon* (Surigao).
58. *Burayoan*
59 *Busasawa* (Bohol)
60 *Cabangabauan* (Bohol)
61 *Cagang* (Cagayan and Isabela), probably a deadly poisonous snake
62 *Calabucab*, a name applied in various localities to *Cheirydrus granulatus*, found in both fresh and sea water It is harmless. The name is sometimes applied to the poisonous species of *Disteira* or *Lapemis*, particularly *Disteira ornatus*
63 *Calapan* (Bohol); said to be yellow
64 *Calapihon* (Bicol provinces).
65. *Camamalu* (Pampango), synonymous with *tadioco* and *carasaen*, a name applied to *Naja naja* and *Naja hannah*, deadly, Casto de Elera says that it is *Hemibungarus calligaster*
66 *Canlalamat*, synonym of *camamalu*
67 *Carasaen* (Ilocano), a name applied to the cobras
68 *Carasen-apimorong* (Pampango), *Naja hannah*
69 *Cauaho*
70 *Caypihin* (Marinduque), said to be blue
71 *Cecilia* (Pangasinan).
72 *Cuyog* (see *ahas-na-cuyog*)
73 *Dadayaoen* (Ilocos Sur).
74 *Dahilog* said to be a synonym of *balitoc*
75 *Dahon-palay*, a name usually applied to *Dryophis prasinus* or to species of *Dendrophis* or *Dendrelaphis*
76 *Dapug* (Misamis)
77 *Digmirogman* (Bohol)
78 *Dopong* or *dupong* (Bicol and Visayan), probably *Trimeresurus wagleri* or other species of *Trimeresurus*
79 *Dona* (Ilocos Sur).
80 *Duangsungay* (Ambos Camarines)

81 *Dugjo* (Misamis), said to be a black burrowing snake, about 20 centimeters long (*Typhlops braminus*)
82 *Duhol* (Batangas), probably *Cheirydrus granulatus*, harmless
83 *Gayatosan*, synonym of *ahas-na-cuyoy*
84 *Gujut* (Ilocos Sur)
85 *Hagom* (Surigao)
86 *Haguason* or *jaguason* (Misamis and Butuan), applied to *Naja naja*; deadly poisonous
87 *Hanhan*, *Dryophis* sp
88 *Hanlucayon*, said to be a synonym of *dahon-palay*
89 *Ibiñgan* (Bohol), said to be black above, lighter on the sides, and yellow on the abdomen
90 *Ilau* (Bohol), said to be very large, attaining a length of 6 meters.
91 *Inmadduquing* (Ilocos Sur)
92 *Jaguason*, see *haguason*
93 *Kabike* (Laguna)
94 *Laob* (Bohol)
95 *Lepueng* (Pangasinan)
96 *Lilusan* (Misamis), *Boiga dendrophila*
97 *Locaylocay* (Albay)
98 *Locoylocoy* (Bicol)
99 *Lopot* (Pangasinan)
100 *Lubag* (Bohol)
101 *Lucayon* (Visayan)
102 *Lumalabao*, a synonym of *sumasapao*
103 *Luyey* (Ilocos Sur)
104 *Macavalo*, a synonym of *macauaiu*
105 *Magambanay* (Surigao)
106 *Magcal* (Negros), *Python reticulatus*
107 *Magcopo* (Bohol)
108 *Magtitina* (Misamis)
109 *Malabasan* (Tagalog), applied indiscriminately to various poisonous water snakes of the genera *Distira* and *Lapemis*
110 *Malabiga* (Cagayan and Isabela)
111 *Malatumbagu*, sometimes applied to the small harmless snake *Natrix spilogaster*
112 *Malaugto* (Misamis)
113 *Mamalalaca* (Laguna)
114 *Mamayang* (Pangasinan)
115 *Mamuga* (Palawan)
116 *Manapao*, a synonym of *dahon-palay*
117 *Mandadalag* (Bohol, Polillo, and Manila), applied to *Natrix spilogaster* about Manila and, according to Griffin, to *Trimeresurus halieus* in Polillo
118 *Mandapug* (Misamis)
119 *Mangabang* (Pangasinan)
120 *Manghihiop* (Misamis), a name applied to the cobra, *Naja naja* and *Naja hannah*
121 *Mangsit*, a black variety of *manapao*
122 *Mungonguqto*, a synonym of *malaugto*
123 *Manimmi* (Negros), a water snake
124 *Manlaso* (Palawan)
125. *Mannocae* or *manucae*, said to feed on frogs

126 *Manoc*, a synonym of *banacon*
127 *Manoca, Natrix spilogaster*
128 *Manojohoc* (Bohol)
129 *Marunugac*, applied to species of *Dryophis*
130 *Maraubôt* or *maraub-but*, said to be a synonym of *sumasapao*
131. *Odto-odto* or *oro-odto*, names applied to various small snakes, in Negros to *Typhlops braminus;* in Palawan to *Dolichus bilineatus* The first is harmless, the second is poisonous
132 *Ongor* (Bohol)
133 *Palacang-ahas* (Tagalog), *Natrix spilogaster*
134 *Palapal*, another two-headed snake
135 *Palaspas*, a synonym of *dahon-palay*
136 *Pamadduguingen* (Ilocos Sur), said to be red and black
137 *Panas* (Ilocos Sur); said to be red and white
138 *Pandanalon* (Surigao)
139 *Pantingsingan* (Negros), *Chersydrus granulatus*
140 *Papala* (Misamis), *Trimeresurus wagleri.*
141 *Pim-maltat*, said to be synonymous with *dahon-palay*
142 *Pulaan* (Ilocos Sur)
143 *Quinongsing* (Pangasinan)
144 *Romuanon* (Ambos Camarines and Albay), a poisonous snake, applied to various species of *Trimeresurus*
145 *Rupong* (Albay), probably a synonym of *dupong, Trimeresurus* sp
146 *Salabay* (Bohol)
147 *Sapao*
148 *Saua* (Visayas), applied to *Python reticulatus*
149 *Secharan* (Union)
150 *Sibuga* (Bohol).
151 *Silungbilao* (Pampango); this may be *Hemibungarus* sp
152 *Soidodoi mallon* (Ilocos Norte), probably *Ophites aulicus*
153 *Sua* (Surigao)
154 *Sultip* (Ilocos Norte)
155 *Sumasapao* (Ilocano), a tree snake
156 *Tabadmg* (Manobo), *Natrix annulata*
157 *Tadioco* (Pangasinan, Pampanga), applied to the hooded cobras
158 *Tagnhilog* (Surigao)
159 *Taguig* (Palawan)
160 *Taguualo* (Bohol).
161 *Talamuguingan* (Ilocos Norte)
162 *Talasayin* (Batangas).
163 *Talbustubu* (Marinduque), a synonym of *dahon-palay*
164 *Talenbilao*, applied to poisonous sea serpents
165 *Tamangulan* (Palawan)
166 *Tamguibolason* (Bohol)
167 *Tangkaybiga*, a synonym of *ulupong*
168 *Tanquig* or *tanquip* (Surigao)
169 *Tnita*, a synonym of *tuleng* or *dueng.*
170 *Toghod* (Bohol)
171 *Tolog* (Marinduque), *Ophites aulicus*
172 *Tuleng* (Ilocano)

173 *Tulog* (see *ahas-na-tulog*)
174 *Uoo-uao* (Misamis), *Laticauda colubrina*
175 *Ugalupong* (Bohol)
176 *Ugu* (Cagayan and Isabela)
177 *Umngan* (Cagayan and Isabela)
178 *Vuacac* (Ilocos Sur).
179 *Walo-walo* (Negros), *Lapemis hardwickii*

FAUNAL RELATIONS AND DISTRIBUTION OF PHILIPPINE SNAKES

The herpetological faunas of the Philippines, particularly the ophidian fauna, are derived from a variety of sources, but undoubtedly their greatest affinity is with Borneo. A casual glance at a map shows the Philippines joined to surrounding land bodies by a series of island chains, five or six in number.

To the north there is but a single chain comprised of the Babuyan and Batan Islands. This chain reaches nearly to Formosa, which in turn is joined with Japan through the Riu Kiu Island group. To the south and southwest there are no less than three island chains that connect with Borneo. The most important of these three is the Palawan Island group, including the Calamianes, the Cuyo Islands, Palawan, and Balabac The second chain, not so clearly defined as the former comprises the Cagayan Islands, and Cagayan Sulu The third chain which approaches more nearly to the mainland is the Sulu Archipelago, which includes a number of island groups, and the larger islands Basilan, Jolo, and Tawitawi, with numerous small islands. As might be suspected the Philippines have far more genera and species in common with Borneo than with any other land body. To the south there is a second chain which divides, one branch connecting with Celebes through the Sanghir Islands, and the other with Gilolo, and the Moluccas, through Talaur, and Morotai

There are thirty-three recognized genera of land snakes known to occur in the Philippines, and five of these are endemic They are *Oxyrhabdium*, *Cyclocorus*, *Haplonodon*, *Tuphlogeophis*, and *Hologerrhum* The first genus has two known species, each of the other four is represented by a single species.

Two other genera found in the Philippines have not been found in Borneo. These are *Hemibungarus* and *Stegonotus* The first of these, of which there are three known Philippine species, may have entered from the north, as the genus is represented on the mainland of Asia in India and two other species are found in the Riu Kiu Islands. Stejneger states that no species of the genus has been found in Formosa as yet, but suggests the possibility of a discovery, mentioning that little

is known of the faunas of that island. Since the very closely related genus *Callophis* is also a mainland form, the possibility is strengthened that this genus has been derived through the northern chain of islands

The second genus, *Stegonotus*, with two species, appears to have arrived from the south by way of the southern chain of islands connecting with the Moluccas This is certainly not an unreasonable conclusion since we find that the genus is as yet undiscovered in both Celebes and Borneo, while the Moluccas have two species, New Guinea and surrounding islands two, and the Australian mainland two.

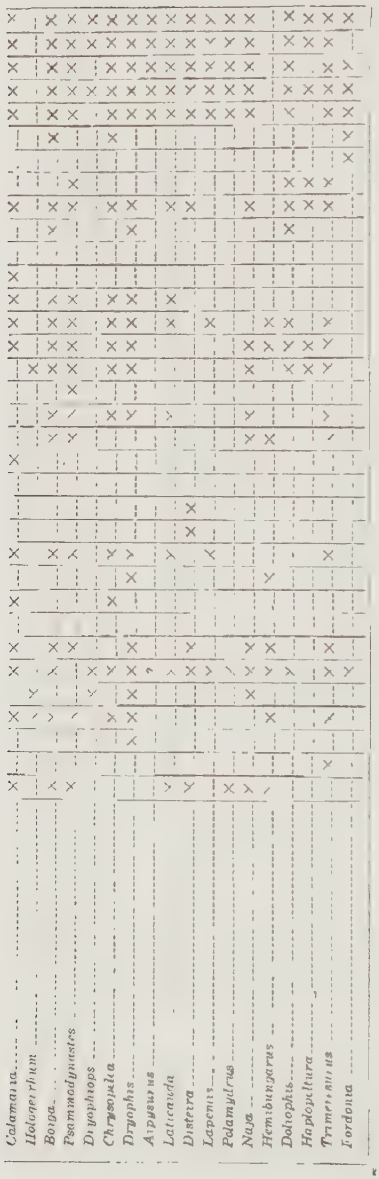
Of the eleven families recognized in this work representatives of seven occur in the Philippines Borneo has representatives of another family, the Anillidæ. It appears rather widespread in the Malay Archipelago, and may eventually be discovered in the Philippines Of the subfamilies of the Natricidæ the Philippines have a representative of the Langahinæ which apparently has not been discovered in the other islands of the Malay Archipelago Table 4 shows the general distribution of families.

TABLE 4.—*Distribution of families and subfamilies of snakes*

Family and subfamily	Australia	New Guinea	Malay Peninsula	Borneo	Celebes	Moluccas	Sulu-Mindanao	Luzon-Visayas	Palawan	Formosa-Japan	Southern Asia	Europe	Africa	Madagascar	North America	Central America	South America	Pacific Islands
Typhlopidæ	×	×	×	×	×	×	×	×	×	×	×							×
Leptotyphlopidæ											×					×	×	
Boidæ																		
Pythoninæ	×	×	×	×	×	×	×	×	×							×		
Boinæ		×									×	×	×	×	×	×	×	
Anillidæ			×	×	×	×					×							
Uropeltidæ																		
Xenopeltidæ				×	×		×									×	×	
Natricidæ																		
Acrochordinæ		×	×	×	×	×	×	×	×									
Natricinæ	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Homalopsinæ	×	×	×	×	×	×	×	×	×	×	×							
Coronellinæ	×	×	×	×	×	×	×	×	×	×	×	×			×	×	×	
Rachiodontinæ														×				
Boiginæ	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Elachistodontinæ											×							
Langahinæ							×	×										
Elapidæ																		
Hydrinæ	×	×	×	×	×	×	×	×	×	×			×			×	×	
Elapinæ	×	×	×	×	×	×	×	×	×	×	×	×	×		×	×	×	
Amblycephalidæ			×	×	×				×		×						×	×
Cobridæ										×	×	×	×					
Crotalidæ			×	×	×	×	×	×	×	×	×	×						

TABLE 5.—*Known distribution of genera of snakes occurring in the Philippines*

Genus	Formosa and Japan	Batan	Camiguin	Polillo	Northern Luzon	Central Luzon	Southern Luzon	Lubang	Mindoro	Panay	Negros	Cebu	Bantayan	Bohol	Tawi-Tawi and Maybate	Leyte	Samar	Dinagat	Northern Mindanao	Southern Mindanao	Western Mindanao	Sulu Archipelago	Cagayan Sulu	Cuyo Islands	Calamianes	Palawan	Balabac	New Guinea	Moluccas	Celebes	Borneo	Java	Sumatra	Asia
Typhlops						×	×		×																							×	×	×
Python				×																												×	×	×
Xenopeltis						×	×																									×	×	×
Cerberus							×																									×	×	×
Stegonophis																																×	×	×
Natrix																																×	×	×
Oxyrhabdium																																×	×	×
Cyclocorus																																×	×	×
Hurria																																×	×	×
Ophites																																×	×	×
Haplocedon																																×	×	×
Stegonotus																																×	×	×
Dryocalamus																																×	×	×
Zaocys																																×	×	×
Haberchus																																×	×	×
Calamaria																																×	×	×
Coniophanes																																×	×	×
Elapsoidea																																×	×	×
Lycodon																																×	×	×
Leptophis																																×	×	×
Dendrelaphis																																×	×	×
Enhydrina																																×	×	×
Pseudohaje																																×	×	×
Typhlogyrophis																																×	×	×


Calamaria
Holoperhion
Boiga
Psammodynastes
Dryophiops
Chrysopelea
Dryophis
Ahaetulla
Lalocnota
Distira
Lepemis
Polamydrus
Naja
Hemibungarus
Dinophis
Haplocercus
Trimeresurus
Lordonia

For the most part the genera that do occur are widely distributed in the Philippines Thus of the thirty-three terrestrial and arboreal forms, seven have not been taken in Luzon nor, with two exceptions, in the Visayan Islands These are *Xenopeltis*, *Dryocalamus*, *Sibynophis*, *Oligodon*, *Liopeltis*, *Typhlogeophis*, and *Haplopeltura*

Oligodon has been taken in Negros, and *Liopeltis* in Samar and in Leyte These two also occur in the Palawan group

TABLE 6.—*Genera of snakes approaching, but probably not entering, the Philippines*

Genus	Malay Peninsula	Sumatra	Java	Borneo	Philippines	Celebes	Moluccas	New Guinea	Japan	Formosa
Enygrus						×	×	×		
Anomalochilus		×								
Cylindrophis			×	×		×	×			
Aerocherdus		×	×	×				×		
Xenodermus			×	×						
Stoliczkaia				×						
Anoplichydrus										×
Xenochrophis		×								
Achalinus									×	
Micropisthodon		×	×	×		×				
Pseudoxenodon			×							
Hydrelaps				×						
Ophisthotrophis		×		×						
Brachyorrhus								×		
Elapsoides		×	×							
Leptrophis				×						
Ptyas	×		×	×		×	×			
Dinodon									×	×
Xenelaphis		×		×						
Coryphis										
Arcocalamus				×						
Idrophobia				×						
Calamorhabdium							×			
Agrophis		×		×		×				
Rhabdophidium							×			
Calliophis									×	
Iguanognathis										
Bungarus									×	
Enhydrus		×	×			×		×	×	
Homalopsis		×	×	×						
Cantoria				×						
Emydocephalus									×	×
Enhydrinae								×		
Acalyptus										
Thalassophis			×							
Amblycephalus		×	×	×						
Aglistrodon			×							

[a] Malay Archipelago [b] Western tropical Pacific and China Sea

and the Mindanao-Sulu group Of the other genera, *Dryocalamus* and *Sibynophis* are known only in the Palawan group; *Xenopeltis*, in the Palawan group and the southern Sulu island, Bongao; *Typhlogeophis* appears to be confined to Mindanao and nearby islands; *Haplopeltura* occurs both in Mindanao and in Palawan

No table of the distribution of species is attached but the known distribution is discussed under individual species treated in this work

A table is attached showing the distribution of extra-Philippine genera, some of which may be eventually taken in the Philippines

SPECIES OF SNAKES ERRONEOUSLY ATTRIBUTED TO THE PHILIPPINE ISLANDS

Typhlops philippinus Cuvier, Reg Anim 2d ed 2 (1829) 74, Muller, Trev Zeits Phys 4 349, Dumeril and Bibron, Erp Gén 1 423
This is *Rhinophis planiceps*. It does not occur in the Philippines

Typhlops diardii Schlegel
El Archipel Filipino 1 (1900) 675
Does not occur in the Philippines

Typhlops ater Schlegel
El Archipel Filipino 1 (1900) 675
Does not occur in the Philippines

Python molurus Gray
El Archipel Filipino 1 (1900) 673
Erroneously recorded

Uropeltis philippinus Cuvier, Reg Anim 2d ed 2 (1829) 76, Duméril and Bibron, Erp Gén 7 (1854) 161, Marshall, Atlas der Thier (1887) pl. 5, Casto de Elera, Cat Fauna Filipinas 1 (1895) 424

Rhinophis philippinus Muller
Casto de Elera, Cat Fauna Filipinas 1 (1895) 424
This is *Rhinophis planiceps* Peters, found only in Ceylon

Calamaria lumbricoidea Boie
Gunther, part, Cat Col Snakes Brit Mus (1858) 6, Boettger, Mon Berl Ak (1886), Casto de Elera, Cat Fauna Filipinas 1 (1895) 425
An erroneous record

Calamaria vermiformis Duméril and Bibron
Casto de Elera, Cat Fauna Filipinas 1 (1895) 425
Very probably an erroneous record

Calamaria temminckii Duméril and Bibron
Casto de Elera, Cat Fauna Filipinas 1 (1895) 425
Very probably an erroneous record

Aspidura brachyorrhos Boie.
Casto de Elera Cat Fauna Filipinas 1 (1895) 426
This species is confined to Ceylon

Oligodon sublineatus Dumeril and Bibron

Casto de Elera, Cat Fauna Filipinas 1 (1895) 426

This species is confined to Ceylon and the Nicobars

Ablabes collaris Gray

It is probable that this should be *Polyodontophis bivittatus* Boulenger, as there are specimens of this species in the Santo Tomás Museum

Simotes russelli Jan (= *Holarchus arenarius* Shaw)

This species is confined to India

Coryphodon korros Schlegel

Casto de Elera Cat Fauna Filipinas 1 (1895) 428.

This is *Ptyas korros* Schlegel It probably does not occur in the Philippines

Coryphodon mucosus Linnæus

Casto de Elera, Cat Fauna Filipinas 1 (1895) 428

This is *Ptyas mucosus* and probably is confined to southeastern Asia

Coryphodon fuscus Gunther

Casto de Elera, Cat Fauna Filipinas 1 (1895) 428

This species is *Zaocys fuscus* Gunther and appears to be confined to Borneo

Coryphodon hexanotus Cantor

Casto de Elera, Cat Fauna Filipinas 1 (1895) 428

This is *Xenelaphis hexagonotus* Cantor and probably does not occur in the Philippines

Tropidonotus aff dorsalis Gunther

Muller, III Nacht Cat Herp Samml Basel Mus. (1883) 15

Tropidonotus aff hypomelas Gunther

Muller, III Nacht Cat Herp Samml Basel Mus. (1883) 15

Tropidonotus schistosus Daudin

Casto de Elera, Cat Fauna Filipinas 1 (1895) 432

This is a synonym of *Helicops schistosus* Daudin and is confined to India and Ceylon

Campylodon prevostianum Dumeril and Bibron, Erp Gen 7 (1854) 964

This is *Gerardia prevostianum* Duméril and Bibron, and is probably confined to the Indian Ocean

Gonyosoma frenatum Gray

Casto de Elera, Cat Fauna Filipinas 1 (1895) 432

This is *Elaphe frenatum* Gray, and is confined to India

Dendrophis punctulata Gray

This species has been included in several lists on the strength of a record by Parenti and Picaglia Atti Soc Nat Modena Mem Orig 5 (1886) 50 Very probably this specimen should have been recorded as *Dendrelaphis terrificus* Peters, and the record for *D punctulata* is undoubtedly incorrect

Leptophis vertebralis Duméril and Bibron, Erp Gén 7 (1854) 543

I am unable to determine the identity of this species

Passerita mycterizans Linnæus

Casto de Elera, Cat Fauna Filipinas 1 (1895) 435

This does not occur in the Philippines

Dipsas drapiezi Boie

Casto de Elera, Cat Fauna Filipinas 1 (1895) 436

This is *Boiga drapiezii* Boie, and probably does not occur in the Philippines

Dipsas fusca Gray

Casto de Elera, Cat Fauna Filipinas 1 (1895) 436

This is *Boiga fusca* Gray, and is confined to Australia

Lycodon bairdi Steindachner (= *Psammodynastes pulverulentus*)

Lycodon culcullatum Duméril and Bibron, Nomencl Rept Amph Mus Zool Berolin, Berlin (1856) 27

This is a synonym of *Stegonotus culcullatus*, apparently confined to New Guinea and Australia

Lycodon modestus part, Schlegel (= part. *Stegonotus modestus* Schlegel, part = *Stegonotus culcullatus* Duméril and Bibron)

Neither of the two species occurs in the Philippines

Piesigaster boettgeri Seaone (= *Epicrates inornatus* Reinhardt)

This species was originally described from Panay through a wrongly labeled specimen It is confined to the West Indies

Elaps intestinalis Laurenti (= *Doliophis intestinalis*).

Reported by De Elera, Cat Fauna Filipinas 1 (1895) 441

This species probably does not enter the Philippines

Elaps gracilis Gray (= *Callophis gracilis* Gray).

This species reported by De Elera, Cat Fauna Filipinas 1 (1895) 441, appears to be confined to Malay Peninsula and near-by islands

Hydrophis nigrocinctus Duméril and Bibron, Erp Gén 7 (1854) 1351

This is *Distira nigrocincta* and probably does not occur in the Philippines.

Trimeresurus hypnale Duméril and Bibron, Erp Gén. 7 (1854) 1498

This is *Agkistrodon hypnale* Merrem, confined to Ceylon and India

CLASSIFICATION OF THE SNAKES

The scheme of classification followed in this work is practically identical with that used by Stejneger.*

Suborder Serpentes
- Family Typhlopidæ
- Leptotyphlopidæ
- Boidæ
  - Subfamily Pythoninæ
  - Boinæ
- Family Anillidæ
- Uropeltidæ
- Xenopeltidæ
- Natricidæ

* Bull U S Nat Mus 58 (1907)

Family Amilidæ—Continued
Subfamily Acrochordinæ.
Natricinæ
Homalopsinæ
Coronellinæ
Rachiodontinæ
Boiginæ
Elachistodontinæ
Langahinæ
Family Elapidæ
Subfamily Hydrinæ
Elapinæ.
Family Amblycephalidæ
Cobridæ
Crotalidæ

In the nomenclature of the genera and species the oldest valid name is used in each case, and the variations from the nomenclature of former works must be construed as due to no other reason than necessity

Suborder SERPENTES Linnæus

Serpentes Linnæus, Syst Nat. ed 10 1 (1758) 214

This name appears to be the oldest for this group of animals and is equivalent to the suborder Ophidia of other authors.

Key to the Philippine families of the Serpentes.

a^2 No ectopterygoid bone, teeth in upper jaw only — Typhlopidæ (p 47)
a^1 Ectopterygoid present, teeth in both jaws.
  b^1 Coronoid present; supratemporal large, suspending quadrate, vestiges of hind limbs — Boidæ (p 67)
  b^2 Coronoid absent, no vestige of hind limb
    c^1 A mental groove; maxillary horizontal
      d^1 Prefrontal bone touching nasal — Xenopeltidæ (p 72)
      d^2 Prefrontal bone not touching nasal
        e^1 None of the anterior maxillary teeth grooved or perforated — Natricidæ (p 76)
        e^2 Anterior maxillary teeth grooved or perforated — Elapidæ (p 224)
    c^2 No mental groove; maxillary horizontal — Amblycephalidæ (p 280)
    c^3 A mental groove, maxillary vertically erectile — Crotalidæ (p 283)

NONPOISONOUS SNAKES

TYPHLOPIDÆ

Typhlopidæ, part, Jan, Elenco Syst Ofid (1863) 9, Günther, Rept Brit India (1864) 170, Cope, Proc. Am Philos Soc. 23 (1886) 481; Boulenger, Cat. Snakes Brit. Mus. 1 (1893) 3.

"Cranial bones solidly united; no ectopterygoid, pterygoid not extending to quadrate or mandible; no supratemporal; præfrontal forming a suture with nasal; maxillary loosely attached, with a few teeth disposed transversely to the axis of the skull; no teeth on palate. Mandible edentulous; coronoid bone present. Vestiges of pelvis, reduced to a single bone on each side Body covered with uniform cycloid scales, eyes under the shields" (*Boulenger.*)

The family has three genera *Helminthophis* with five species, confined to South and Central America; *Typhlophis* with one species, confined to South America; and the very large cosmopolitan genus *Typhlops.*

The Typhlopidæ are remnants of a large cosmopolitan group of snakes, and represent probably the oldest living types They

are for the most part diminutive in size, some species of the genus *Typhlops* never attaining a length of more than 200 millimeters. They are burrowing reptiles and are to be found about rotting logs and stumps, and burrowing in the earth or in the root masses of aerial plants.

They feed on small insects, the larvæ and eggs of insects, earthworms, scorpions, and centipedes. The eye is covered by a scale and is frequently dim or invisible in certain species; while in others the eye covering is transparent, and a distinct pupil is visible.

Genus TYPHLOPS Oppel

Typhlops OPPEL, Ord. Rept. (1811) 54, GRAY, Cat. Liz. Brit. Mus. (1845) 132, JAN, Icon. Gén. (1864) 7, GUNTHER, Rept. Brit. India (1864) 172, PEIFFRS, Sitz. Ges. Nat. Freunde (1881) 70, BOULENGER, Fauna Brit. India, Rept. (1890) 235, Cat. Snakes Brit. Mus. 1, (1893) 7, COPE, Ann. Rept. Nat. Mus. (1898) 715; STEJNEGER, Bull. U. S. Nat. Mus. 58 (1907) 260.

Typhlops, part, SCHNEIDER, Hist. Amph. 2 (1801) 339.

Anilios GRAY, Cat. Liz. Brit. Mus. (1845) 135.

Onychophius GRAY, Cat. Liz. Brit. Mus. (1845) 32.

Onychocephalus DUMÉRIL and BIBRON, Erp. Gén. (1844) 272, BOETTGER, Ber. Senck. Nat. Ges. (1886) 104.

Head with enlarged regular plates; nasal shield single, double, or partially divided; prefrontal single; prefrontal, supraoculars, frontal, and parietals rather small, sometimes scarcely larger than body scales; upper labials differentiated, lower labials not or scarcely differentiated from chin scales; mouth narrow, eye usually dim, tail very short. Small burrowing snakes, nonpoisonous.

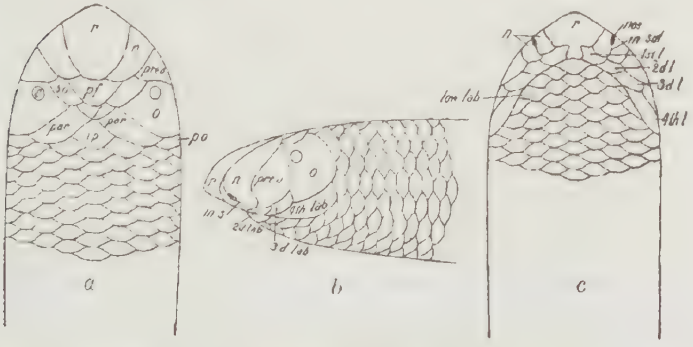


FIG. 1. Head shields of typical Typhlopidæ: *Typhlops subocularis* Taylor, *c* eye, *f* frontal, *ip* interparietal, *ins*, internasal suture, *lab*, labials, *n* nasal, *nos*, nostril, *o*, ocular, *par*, parietal, *pf* prefrontal, *po* postocular, *pref* preocular, *r*, rostral.

This genus has more than one hundred fifty known species Representatives are found in Asia, Africa, Madagascar, Europe, Australia, East Indies, Central and South America, and the West Indies They appear to be absent from North America and New Zealand. The East Indies have twenty known species, two of which, *Typhlops braminus* Daudin and *Typhlops olivaceus* Gray, are reported as occurring in the Philippines The Philippines have fourteen well-defined species They belong to two groups of the genus: one group has the snout rounded in lateral profile, the tail not longer than broad, and the other has the snout with a sharp, cutting edge, slightly hooked, and the tail at least two and one-half times as long as broad.

Key to the Philippine species of Typhlops Oppel

a^1 Snout rounded, nostrils lateral, tail about as long as broad, no subocular
  b^1 Preocular in contact with second and third labials
    c^1 Nasal cleft arising from preocular, nasal completely divided, scales in 20 rows T braminus (Daudin) (p 50).
    c^2 Nasal cleft arising from second labial, nasal completely divided, scales in 26 rows T luzonensis Taylor (p 52)
  b^2 Preocular in contact with third labial only, nasal not completely divided
    c^1 Scales in 28 rows, nasals in contact behind rostral, deep black above, yellowish below T jagorii Peters (p 53)
    c^2 Scales in 30 rows; nasals not in contact behind rostral, reddish brown above, yellowish below T ruficauda (Gray) (p 54)
    c^3 Scales in 26 rows, nasals not in contact behind rostral, reddish brown above, lighter below T ruber Boettger (p 55)
    c^4 Scales in 30 rows, nasals not in contact behind rostral, black above, yellowish below T canlaonensis Taylor (p 55)
a^2 Snout rounded, nostrils lateral, tail as long as broad, a subocular present, nasal cleft arising from second labial, nasal not completely divided, scale rows 28, nasals not in contact behind rostral T manilæ Taylor (p 56)
a^3 Snout with a sharp horizontal edge, nostrils laterolnferior, tail at least twice as long as broad, no subocular
  b^1 Preocular in contact with second and third labials, nasals not in contact behind rostral
    c^1 Nasal cleft arising from first labial
      d^1 Nasal not completely divided
        e^1 Tail two and one-half times as long as broad; scales in 20 to 22 rows T olivaceus (Gray) (p 58)
        e^2 Tail three and one-half times as long as broad, scales in 26 rows T rugosa Taylor (p 58).
      d^2 Nasal completely divided
        e^1 Tail three times as long as broad, scales in 26 to 28 rows T dendrophis sp nov (p 60).

e^2 Tail two and two-fifths times as long as broad, scales in 22 rows . T suluensis Taylor (p 61)

d^2 Nasal cleft arising from first or second labials or their interlabial suture, nasal completely divided, tail six to seven times as long as broad, scales in 26 rows T longicauda Taylor (p 63).

b^2 Preocular in contact with a single labial

c^1 Nasal cleft arising from first interlabial suture, nasal not completely divided, tail three and four-fifths times as long as broad, scales in 26 rows T mindanensis sp nov (p 65)

c^2 Nasal cleft arising from first labial, nasal completely divided, tail four or five times as long as broad, scales in 21 rows T cumingii (Gray) (p 66)

TYPHLOPS BRAMINUS (Daudin)

Eryx braminus DAUDIN, Hist Nat Rept 7 (1803) 279

Tortrix russelii MERREM, Tent Syst Amph (1820) 81

Typhlops braminus CUVIER, Regne Anim ed 2 (1829) 78, BOULENGER, Cat Snakes Brit Mus 1 (1893) 16, Fauna Brit India, Rept (1890) 236, BOETTGER, Ber Senck Nat Ges (1886) 104; GRIFFIN, Philip Journ Sci § D 6 (1911) 254, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 423, STEJNEGER, Bull U S Nat Mus 58 (1907) 260, TAYLOR, Philip Journ Sci § D 12 (1917) 354

Argyrophis bramicus GRAY, Cat Liz Brit Mus (1845) 138

Argyrophis truncatus GRAY, Cat Liz Brit Mus (1845) 138

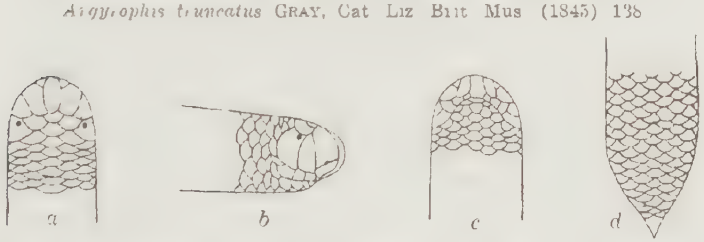


FIG 2 *Typhlops braminus* (Daudin), after Stejneger *a*, head, dorsal view *b* head, lateral view *c* head, ventral view, *d*, anal region and tail

Description of species—(From No 276, E H Taylor collection, collected at La Granja, La Carlota, Occidental Negros, July, 1916, by H C McNamara) Snout rounded in lateral profile, projecting; rostral narrow, its upper portion about one-third width of head, not extending quite to level of eyes; prefrontal not enlarged, very much rounded behind, separating the nasals by a small distance, scarcely as large as frontal, but of similar shape; frontal a little larger than interparietal, which is followed by a very much larger scale, supraoculars not angular, larger than frontal, their lower edge passing near middle of eye, parietals slightly enlarged, larger than supraoculars, followed by a large postparietal, 2 nasals, anterior (or inferior) much smaller than posterior, suture dividing nasals arises from

preocular; latter somewhat smaller than ocular, touching second and third labials, and inferior nasal below; ocular large, with eye usually visible beneath it, with a single postocular behind; 4 labials, the fourth largest, all abruptly increasing in size from the first; 5 to 7 scales on lower jaw between angles of mouth; scales in 20 rows around body; body width in body length, 34, tail a little shorter than wide

Color in life.—Pearl gray above, each scale showing an area of brownish gray and one of bluish gray, below the same; without close scrutiny it appears a uniform pearl gray.

Measurements of Typhlops braminus (Daudin)

	mm
Total length	154
Tail	2 75
Width of head between eyes	3 25
Body width	4 5
Tail width	4

Variation.—Practically no variation in scalation is observable In color the specimens vary from black-brown to gray-blue or pearl gray. Some seem to turn whitish before they shed their skin, yet certain newly shed specimens also are of a very light color; in the one described the eye is almost entirely concealed, and the scales on the head and body seem thicker than usual. There are certain lighter tracings which invariably appear under the scales of the head The fringed markings which follow the rostral and nasal sutures are characteristic of this species, these markings can usually be discerned even in gray specimens, if a small lens is used.

One specimen in my collection (No 277) has a very different appearance from the one described The head as far as the eyes is a pure cream color, the eyes are visible as minute black dots; the head seems more rounding in upper profile and is thicker than in other specimens. The color on the neck is light brown, gradually merging into the slightly darker brown color of the body Each scale has a brown spot and a lighter area No variation from the typical scalation of *Typhlops braminus* can be discerned This variation is unique in a lot of more than 200 specimens examined

Remarks.—This is one of the commonest snakes in the Philippine Islands, but it is not evenly distributed. Mr. H C. McNamara collected more than a hundred at La Granja, La Carlota, Occidental Negros, in a few weeks; at various other localities in Negros I have been unable to find a single specimen, even

after considerable search I did not find a single specimen in eastern Mindanao in two years' collecting In Mindoro, near Calapan, I found this species in large numbers under rocks after heavy rains. The place failed to yield a single specimen when visited at a later time when the earth was dry These snakes lay comparatively large, elongate eggs They feed largely on the larvæ and eggs of small insects or earthworms

The species is known from many localities in Luzon, and from Negros, Samar, Mindanao, Mindoro, Palawan, and Busuanga. It is probably found in all the larger islands of the Philippines Outside of the Philippines it is widely distributed, from South Africa to southern Asia, and throughout the islands of the Indian Ocean and the Malay Archipelago It is present also in Japan, Madagascar, and Guam

TYPHLOPS LUZONENSIS Taylor

Typhlops luzonensis TAYLOR, Philip Journ Sci 14 (1919) 105

Description of species —(From the type, No 109, E H. Taylor collection, collected on Mount Maquiling, Laguna, Luzon, May 12, 1915, by E H. Taylor.) Head rather flat, broader than neck, lower jaw not or scarcely visible in lateral profile, snout rounded, projecting, rather truncate, its end only slightly less deep than head on a level with eyes, portion of rostral visible above much longer and a little wider than the part below, failing to reach the level of eyes by a minute distance, and minutely less than half the width of head, prefrontal larger than frontal, forming a suture with rostral a little less than one-third its own width, its longest sutures formed with supraoculars, frontal, the smallest head scale, forming equal sutures with interparietal and prefrontal, supraocular about same size as parietal, its lower point barely reaching eye; parietals somewhat narrowed on their lower end; nasal completely divided, nasal suture arises from second labial and after passing nostril reaches rostral in a line horizontal to upper edge of nostril; nasals not in contact behind rostral; preocular reaching above level of eyes, about as broad as ocular, in contact with 2 labials below, its edge crosses over middle of eye; 2 postoculars only slightly differentiated from body scales; first labial very small, in contact with anterior nasal only, second labial nearly three times as large as first, touching both nasals and preocular; third labial more than twice as large as second, and a little larger than fourth; lower jaw narrow, about 5 scales on lower jaw between fourth upper labials; eye a visible black spot, very small, with no pupil evident; about 338 scales from head to vent; 10 subcaudal scales,

tail ending in a small spine; width of body in total length, 58; tail as wide as long; scales in 20 rows

Color in life.—Above, a reddish olive brown, below, yellowish brown, each scale with a darker yellowish brown area, giving a checked appearance on close examination; rostral, nasal, and labials on underside of snout yellowish white.

Measurements of Typhlops luzonensis Taylor

	mm
Total length	260
Tail	4
Width of body	4.5
Width of head	4.5
Width of tail	4

Remarks.—Only the type specimen is known. The species is obviously related to the group of the genus represented by *Typhlops ruficauda*, *T. ruber*, and *T. kraalii*, the first two of which are represented in the Philippine fauna. From *T. ruficauda* it differs in having 4 less rows of scales about the body and the nasal completely, instead of partially, divided. From *T. ruber* it differs in having the preocular in contact with 2 labials instead of 1, the nasal completely divided, and the length greater in proportion to the width of the body. (Here the width of the body is contained in the total length 58 times, while in *T. ruber* it is only 36.) From *T. kraalii* it differs in having the rostral much more than one-third the width of the head, and the preocular in contact with 2 labials instead of 1; in color it is also somewhat different from *T. kraalii*, and the latter is very probably a larger species.

The type was collected low on the side of Mount Maquiling, Laguna, Luzon. It was discovered under a rotting log. Nothing further is known of its habits.

TYPHLOPS JAGORII Peters

Typhlops jagorii Peters, Mon. Berl. Ak. (1861) 684, Boettger, Ber. Senck. Nat. Ges. (1886) 104, Boulenger, Cat. Snakes Brit. Mus. 1 (1893) 18; Casto de Elera, Cat. Fauna Filipinas 1 (1895) 423; Griffin, Philip. Journ. Sci. § D 6 (1911) 254.

Description of species.—(After the type description.) Snout depressed, rounded, nostrils lateral, upper portion of rostral elliptic, about half as broad as head; nasals in contact behind rostral; preocular present, in contact with third labial only; prefrontal larger than frontal, supraoculars smaller than parietal, 4 upper labials, second twice as large as first, 28 rows of scales around the body.

Color.—Above dark black, the underside, lips, and end of tail yellow.

Measurements of Typhlops jagori Peters

	mm
Total length	220
Head length	8
Tail	5

Remarks.—The type was collected by F. Jagor on Mount Isarog, Camarines, Luzon. It is well differentiated from the other Philippine species by the junction of the nasal shields behind the rostral. It is known only from the type.

TYPHLOPS RUFICAUDA (Gray)

Anilios ruficauda GRAY, Cat. Liz. Brit. Mus. (1845) 136.
Typhlops (Anilios) ruficauda PETERS, Mon. Berl. Ak. (1861) 684.
Typhlops ruficauda BOETTGER, Ber. Senck. Nat. Ges. (1886) 104, BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 29, CASTO DE ELERA, Cat. Fauna Filipinas 1 (1895) 423, GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 255.
Typhlops dichromatus JAN, Icon. Gén. (1864) 21, 1. 3, pls. 4, 5, fig. 1.
?*Typhlops petersii* STEINDACHNER, Verh. Zool.-Bot. Ges. Wien (1867) 515, pl. 13, figs. 7–9.

Description of species.—(From Boulenger.) "Snout rounded, moderately projecting; nostrils lateral. Rostral about one third the width of the head, extending to the level of the eyes, nasal semidivided, the cleft proceeding from the second labial, præocular present, as broad as the ocular, in contact with the third labial only, eyes distinct, præfrontal, supraocular, and parietal considerably larger than the scales on the body, four upper labials. Diameter of body 31 to 55 times in the total length; tail as long as broad, ending in a spine. 30 scales round the body."

Color.—"Reddish brown above; snout, tail, and lower surfaces yellowish.

"Total length 250 millim."

Remarks.—The types (one adult, one half-grown, and one young) are in the British Museum. The exact locality from which the types were obtained is no longer known. Peters* reports specimens from Daraga and Paracale, in southern Luzon. Boulenger† has referred *Typhlops petersii* Steindachner to this species, with a question mark. At the present time I am unable to offer an opinion and propose leaving it a synonym of *T. ruficauda*. I have not seen Steindachner's description or figures. Known only from the Philippines. The types were probably collected by H. Cuming.

* Mon. Berl. Ak. (1861) 684.
† Cat. Snakes Brit. Mus. 1 (1893) 29.

TYPHLOPS RUBER Boettger

Typhlops ruber BOETTGER, Zool Anz 20 (1897) 164; GRIFFIN, Philip Journ. Sci § D 6 (1911) 255

Description of species.—(After the type description.) Head depressed, snout rounded and strongly projecting; nostrils lateral; rostral moderately broad, upper part somewhat more than one-third the width of head, its posterior part not reaching level of eyes, its underside clearly longer than broad, nasal almost entirely divided, the suture arising from second labial; preocular as broad as ocular, in contact below with only the very large third labial, eye small, very distinct; upper head shields, with the exception of the middle longitudinal row, considerably larger than body scales, 4 upper labials, of which the last 2 are especially well developed and of nearly the same size; diameter of body in total length, 36 to 37; tail somewhat broader than long, ending in a sharp spine; 26 scale rows about body.

Color.—Uniform, bright red-brown above; below scarcely as bright as above.

Total length, 225 millimeters.

Remarks.—I have been unable to find specimens of this species. Obviously it is very rare and, I believe, still known only from the type, which came from Samar. This species is said to be closely related to *Typhlops kraalii* from the Kei Islands near New Guinea, but differs in being less slender, and in having the tail shorter, the scales on the head larger, and the color different.

TYPHLOPS CANLAONENSIS Taylor

Typhlops canlaonensis TAYLOR, Philip Journ Sci § D 11 (1917) 354

Description of species.—(From No. 241, E H Taylor collection; collected at an elevation of about 750 meters on Canlaon Volcano, Negros, December 25, 1915, by E H. Taylor.) Head depressed, a little wider than body; snout projecting moderately, rostral elliptic, distinctly wider behind than at tip of snout and failing to reach level of eyes by half the width of prefrontal, more than one-third the width of head; nostrils lateral, not visible from above, nasals large, not in contact behind rostral, not completely divided by nasal cleft, which arises from second labial and passes through nostril to a point about halfway from nostril to rostral; nasal in contact with first 3 labials; preocular present, narrowed to a point at its upper end, its greatest width, equal to that of ocular, occurs below level of eye; preocular narrowly in contact with supraocular above and

with only the third labial below practically the same length as ocular, ocular somewhat rectangular in outline, rapidly narrowed to a point above and below, in contact with third and fourth labials, bordered posteriorly by 2 somewhat enlarged body scales (3 on left side), prefrontal wider than deep, distinctly larger than frontal, which is somewhat wider than long, and narrowly in contact with prefrontal; supraoculars larger than either of these scales and about equal in size to parietals, which are a little more elongate and more than half lying behind oculars; interparietal scale not as large as frontal; eye visible near anterior border of ocular, much below the point of contact with supraocular, eye rather large, pupil distinct and whitish; 30 scale rows about body; tail ending in a sharp spine.

Color in life.—Above shiny greenish black (appearing dark green in certain lights); snout dark brown; underside of snout, belly, and entire tail pinkish yellow. The dark and the yellow areas are well defined, the black covering 15 scale rows. Head with narrow lighter lines, more or less outlining the head scales.

Measurements of the type of Typhlops catlaoensis Taylor

	mm
Total length	122
Tail	2.5
Width of head	4.2
Width of body	3.5
Width of tail	3

Remarks.—This species is related to *Typhlops ruficauda* Gray. It differs much in color, the rostral is wider and does not reach the level of the eye, and the tail is wider than long. In coloring it resembles *T. jagori* Peters, from Luzon, but the nasals are not completely divided and do not touch behind the rostral; the second labial is far from twice as large as the first. It is impossible to tell whether the specimen at hand is adult or not. However, it is probable that it is a smaller form than the other two species mentioned above. Only one specimen was found, although the locality was very thoroughly searched. It was found burrowing under a decayed log.

TYPHLOPS MANILÆ Taylor

Typhlops manilæ TAYLOR, Philip. Journ. Sci. 14 (1919) 106.

Description of species.—(From the type, an unnumbered specimen in Santo Tomás Museum, labeled "Filipinas;" locality and collector unknown, probably from Luzon.) Snout rounded in front, projecting about 2 millimeters; a distinct depression across head in region of eyes, rostral narrowed at a point on snout

between nostrils, distinctly longer than wide below; rostral little more than one-third the width of head; nasals not in contact behind rostral; rostral reaching level of eyes; prefrontal rather large, narrowly in contact with frontal; supraoculars large, their lower end not reaching eye; frontal slightly smaller than prefrontal, about the same shape; parietals rounding, a little broader than deep, smaller than supraocular; interparietal enlarged; nasal not completely divided; suture issues from second labial, then makes a backward deflection which widens the anterior part of nasal, preocular narrowed at upper end, reaching above level of eye but scarcely reaching below level of nostril, abruptly widened below eye, its posterior suture with ocular not crossing eye; nasal much wider than either preocular or ocular; a small subocular scale below ocular in contact with second and third labials; preocular touches second labial behind this intercalated scale, ocular widens abruptly on a level with eye, and extends higher than preocular; first labial elongate, second higher and shorter, of nearly the same area, third very large, three or four times as large as second, reaching to near the top level of nostril, larger and higher than fourth labial (third labial on one side is fused with subocular); 3 scales border ocular behind; eyes very small but distinct, nostril comparatively large, lower jaw very narrow, in its middle scarcely two-fifths the width of head. Tail ends in a blunt spine; 12 scales under tail in a longitudinal line, scales in 28 rows about body.

Color in life.—Reddish brown above, the anterior part rather more grayish brown, the posterior two-thirds of body darker brown; head distinctly marked with darker and lighter (usually) curved areas; snout yellowish; below light yellowish, each scale with a slightly darker area.

Measurements of Typhlops manilæ Taylor

	mm
Total length	230
Tail	5
Width of tail	5.2
Width of body	5
Width of head	5.5

Remarks.—This unique specimen was found in the collection of the Santo Tomás University, Manila. The container was labeled "Filipinas" with no indication as to the locality from which it came. This species as characterized by the presence of a subocular has no close affinity among other species of the genus in the Philippines. It belongs to the division of the genus of which *Typhlops ater* and *T. inornatus* are members, but differs

from them in the very much larger number of scale rows, as well as in other characters

TYPHLOPS OLIVACEUS (Gray)

Onychophis olivaceus GRAY, Cat Liz Brit Mus (1845) 133
Onychocephalus olivaceus PETERS, Mon Berl Ak (1861) 684, BOETTGER, Ber Senck Nat Ges (1886) 105, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 424
Typhlops olivaceus BOULENGER, Cat Snakes Brit Mus 1 (1893) 50; GRIFFIN, Philip Journ Sci § D 6 (1911) 255

Description of species.—(From Boulenger.) "Snout very prominent, with a narrow, sharp, subcrescentic transverse edge and inferior nostrils. Rostral large, its upper part longer than broad and about three-fifths the width of the head, not extending to the level of the eyes, its lower part as broad as long, nasal nearly completely divided, the cleft proceeding from the first labial, præocular present, nearly as broad as the nasal or the ocular, in contact with the second and third labials, eyes distinct, præfrontal considerably enlarged, four upper labials. Diameter of body 50 to 68 times in the total length; tail twice and a half as long as broad, ending in a spine, 20 or 22 scales round the body. Pale brown, lighter inferiorly.

"Total length 410 millim.

"Philippines, Moluccas, North-west Australia."

Remarks.—Boulenger* records four specimens. One specimen, the type, is from the Philippines. Peters† gives two localities on Samar, Loquilocun and Borongan. Here, he states, it is called *tuna*. The types were collected by H. Cuming. I have been unable to find this species, and there is no specimen in the Bureau of Science collection. Boulenger gives *Typhlops* (*Onychocephalus*) *angusticeps* Peters as a synonym of this species. An examination of Peters's figures‡ leads me to regard this as an error. The presence of a subocular, as well as of other characters, would seem to prohibit this association.

TYPHLOPS RUGOSA Taylor

Typhlops rugosa TAYLOR, Philip Journ Sci 14 (1919) 109

Description of species.—(From the type No. 97, E. H. Taylor collection, collected at Bunawan, Agusan, Mindanao, July 14, 1913, by E. H. Taylor.) Head rough, the anterior outline

* Boulenger, Cat. Snakes Brit. Mus. 1 (1893) 51.
† Peters, Mon. Berl. Ak. (1861) 684.
‡ Mon. Berl. Ak. (1877) 417, pl. figs. 3, 3*a*, 3*b*, 3*c*.

broken by depressions between scales along sutures, with transverse cutting edge, somewhat hooked in lateral profile; rostral a little longer than wide above, not reaching level of eyes, more than one-third the width of head, part of rostral below as deep as wide, dimly granular, prefrontal a little wider and somewhat smaller than frontal, its posterior point reaching a little beyond level of eyes; frontal as broad as long, larger than interparietal, supraocular larger than frontal, wider than deep; parietals much larger than frontal, separated by an interparietal, which is smaller than frontal, parietals not twice as wide as long; nasal with a swollen prominence about and above nostril, which gives the anterior head outline an irregular appearance, nostrils latero-inferior, not visible from above; nasal cleft issues from first labial and barely passes beyond nostril, not wholly dividing the scale, preocular not as wide as and much shorter than nasal, in contact with 2 labials; eyes dim, barely outlined; 2 postoculars, inferior largest, in contact with fourth labial; 4 upper labials, fourth largest, first and second smallest, subequal in size, scales in 26 rows, tail ending in a sharp spine, 479 scales in a longitudinal row from head to tail, body width in total length, 50, tail width in tail length, 3 5; tail length in body length, about 17.

Color in life.—Above brownish to golden yellow, slightly lighter beneath. There is very little distinction between the two colors, as they merge gradually on the sides Each scale with a somewhat darker area

Measurements of Typhlops rugosa Taylor

	mm
Total length	395
Tail	23
Width of head	7 5
Width of body	8
Width of tail	6 5

Remarks.—Two other specimens besides the type were taken, one adult, and one young. These two were forwarded to Dr. Lawrence E Griffin, at the University of Pittsburg They have not been at hand for comparison. All were taken in masses of fern roots growing in high forest trees *Typhlops rugosa* has no close affinity among the Philippine species, unless it be with *T. mindanensis* Taylor From the latter it differs in the size of the frontal, which is larger than the prefrontal in *T. mindanensis* The former has 2, the latter 3, labials touching the nasal, in the former the head is very rough, in the latter, comparatively smooth. Many other differences are obvious on a

comparison of the two descriptions The roughness of the head in *T. rugosa* is not unlike that in *T. crossii* and *T. reginæ* but here the resemblance between them ceases.

TYPHLOPS DENDROPHIS sp. nov

Type.—No 93, E H. Taylor collection; collected at Bunawan, Agusan, Mindanao, August 15, 1913, by E H. Taylor

Description of type.—Head flattened above, elliptic in outline, broader than neck, snout in lateral profile rather wedge-shaped, with a narrow, sharp, subcrescentic, transverse edge, with nostrils inferior; rostral about as broad below as above, a little more than one-third width of head, reaching level of eyes, prefrontal angular, forming a suture with rostral about one-third its width, a little larger than frontal but of the same shape, much wider than deep, frontal wider than deep, forming equal sutures with prefrontal and interparietal; latter a little wider than frontal and followed by 2 or 3 enlarged scales (the latter character is not constant), supraocular wider than deep, its lower point failing to reach eye; parietals much elongate, twice as long as wide, reaching to near level of eye, nostril between 2 nasals, anterior very small and narrow, the suture dividing them arising from first labial, edge of rostral approaches close to nostril; preocular present, not as wide or as deep as ocular, not touching eye, in contact with 2 labials below, 3 scales behind ocular, latter large, with a slight rounded prominence above eye; first labial as large as or larger than second, fourth larger than third; tail ending in a sharp spine, 26 rows of scales about body, 497 in a longitudinal row from back of head to end of tail, 29 scales under tail from anus to tip Body width in body length, 49.7, tail width in tail length, 3 1

Color in life.—Above olive to brownish yellow, grading insensibly into the lighter color on belly. Each scale with a lighter and darker part; snout somewhat lighter

Measurements of Typhlops dendrophis sp nov

	mm
Total length	398
Tail	21
Width of body	8
Width of tail	6 75

Variation.—There are three specimens of this species in my collection, and one mutilated specimen in the Bureau of Science collection, all collected at Bunawan, Agusan, Mindanao They agree fairly well in measurements and proportions. The body

width in the body length varies from 46 to 49, tail width in tail length, 3 1 All the specimens save the type have 28 scale rows around the body The relation of the nasal cleft and the preocular to the labials is identical in all the specimens; they are also identical in color

TABLE 7.—*Measurements and scale counts of Typhlops dendrophis sp nov*

No	Length	Tail	Scale rows	Width of body	Width of tail	Body width in total length	Tail width in tail length	Scales under tail	Collection
	mm	*mm*		*mm*	*mm*				
93	398	21	28	8	6 75	49 7	3 11	29	E H Taylor
94	334	17	28	7 25	5 50	46 0	3 09	28	Do
95	392	20	28	8	6 50	49	3 07	28	Do
1745	-----	-----	28	6	4 75	--------	--------	29	Bureau of Science

Remarks.—This species is related to *Typhlops olivaceus* (Gray), but differs in having the rostral reach the level of the eye, and the nasal completely divided The diameter of the body is forty-six to forty-nine times in its total length. The tail is more than three times as long as wide, with 4 to 6 more rows of scales around the body than in *T. olivaceus*. From *T. cumingii* it differs in having the preocular in contact with 2 labials instead of 1, the tail much shorter, the rostral reaching the level of the eyes, and in having more rows of scales about the body. It is a larger, less-slender species than *T cumingii* All four specimens were taken from the root masses of the aerial fern *Asplenium nidus*, obtained when the high forest trees were felled. The snakes burrow in the tough root masses and feed on the larvæ of ants and centipedes which are abundant in the fern roots

TYPHLOPS SULUENSIS Taylor

Typhlops suluensis TAYLOR, Philip Journ Sci § D 13 (1918) 257

Description of species.—(From the type, No. 2001, Bureau of Science collection, collected on Bubuan Island, Tapian group, Sulu Archipelago, October 2, 1917, by E H Taylor.) Snout rather pointed, with a moderately sharp edge, rostral nearly half the width of head, rather truncate behind, forming a broad, straight suture with prefrontal, latter very large, broadly triangular in shape, its longest sutures with preoculars, frontal very small, bordered by 6 scales, about one-fifth the size of prefrontal, interparietal as wide as prefrontal, but somewhat smaller; supra-

oculars slender, about two and a half times as long as broad, parietals much larger than supraoculars, little more than twice as long as wide; nasals separated, their upper ends barely extending beyond the posterior level of rostral, which reaches almost to the anterior level of eyes; nasal completely divided by nasal cleft, which arises from first labial; preocular in contact with 2 labials, not as wide as ocular, its upper end scarcely reaching higher than the upper level of eye, eye distinct, with a minute pupil visible, not crossed by suture of ocular with preocular, 2 body scales border ocular behind; 4 lower labials, second scarcely larger than first; scales in 22 rows around middle of body, 20 on neck, 22 in front of anus, tail ending in a sharp

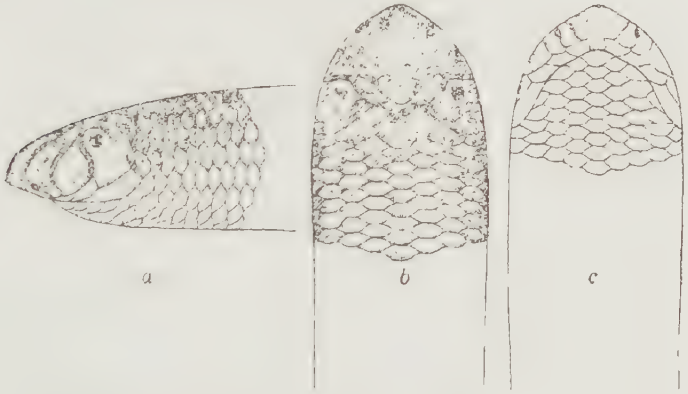


FIG. 7. *Typhlops sulcatus* Taylor. From the type. *a*, head lateral view; *b*, head dorsal view; *c*, chin. × 3.

spine, body width in body length, 46, tail width in tail length, 2.5, tail length in body length, 26.

Color in life.—Above dark drab-gray, covering nine whole and two half rows of scales, each scale with a slightly curved lighter area, which forms a fine-meshed network over body; balance of body very light gray, the ventral median row of scales differentiated by being much lighter in color, with the outer edges and the edges of adjacent scale rows slightly darker; occasionally an entire scale is white in the median ventral row; tip of tail and anal region whitish, underside of head rather light dirty white; head with lighter curved lines, arranged regularly but not following the outlines of the head scales.

Measurements of Typhlops suluensis Taylor

	mm.
Total length	340
Tail	13
Width of tail	5 5
Width of body	7 4
Width of head	5 5

Remarks.—The type was found in a rotten log only about 4 meters from high-tide mark on the beach. Much effort was made to obtain other specimens on Bubuan Island, but none was found. This species seems to be most closely related to *Typhlops multilineatus* and *T. olivaceus*. From *T. multilineatus* it differs in having the rostral shorter, the nasal completely divided, the diameter of the body contained in the total length forty times (in *T. multilineatus* fifty to sixty times), and 22 instead of 20 scale rows around the middle of the body. The prefrontal is larger, the frontal smaller, and the markings are not arranged in longitudinal lines. From *T. olivaceus* it differs in having a complete division of the nasal, the preocular much narrower than the ocular, and the rostral barely half the width of the head. The color is also different from *T. olivaceus*.

TYPHLOPS LONGICAUDA Taylor

PLATE 1

Typhlops longicauda TAYLOR, Philip. Journ. Sci. 14 (1919) 108.

Description of species.—(From the type, No. R 99, E. H. Taylor collection; collected at Bunawan, Agusan, Mindanao, July 15, 1913, by E. H. Taylor.) Head rather broader than neck, rather rounding in outline; snout with a sharp horizontal cutting edge, moderately projecting, not or but scarcely hooked in profile, rostral not as wide below as above, somewhat narrowed between nostrils, failing to reach level of eye by more than half the depth of prefrontal; latter wider than deep, larger than frontal, the suture formed with it larger than that with rostral which is only about one-fifth its width, frontal about as wide as deep, equal to parietals; parietals each divided into 2 scales, which are about the size of the body scales and scarcely differentiated from them, the second one, lying somewhat behind ocular, largest; interparietal somewhat larger than frontal, supraocular diagonal, the lower point reaching anterior level of eye but failing to reach horizontal level by its distance from nasal; 2 nasals, the anterior very small, the suture dividing them arises from

first interlabial suture; preocular narrower and much shorter than ocular, in contact with 2 labials below; ocular large, with a slight, rounded prominence over eye; eye and pupil distinct; 3 postoculars between parietal and fourth labial, 4 labials, first and second smallest, subequal in size, third more than twice as large as second and about half the size of fourth, scales in 26 rows, about 430 scales in a longitudinal line to above vent; 40 scales in a row on underside of tail, body width in body length, 56 6, tail width in tail length, 7 2

Color in life.—Above light yellowish brown, gradually becoming lighter below; head lighter with curving lighter marks, laterally there is a distinct, more or less rectangular, lighter spot, including eye and reaching mouth Each ventral scale has a regular darker brown area

Measurements of Typhlops longicauda Taylor

	mm
Total length	340
Tail	34 5
Width of head	5 5
Width of body	6
Width of tail	4 75

Variation.—Ten other specimens of this species are in my collection; all differ from the type in having a single parietal This character in the type may be anomalous The origin of the nasal suture is not fixed, usually arising near the first interlabial suture, sometimes from first labial, sometimes from second The body width in the body length varies from 45 to 68, the average being about 52, the tail is from six to seven times longer than broad, the average being about 6 2 They vary in shade from yellowish to golden brown above, somewhat lighter below

Remarks.—This species has a very marked, apparently normal enlargement of the pelvic bones and the tail is comparatively longer than in any other of the extremely numerous species of this genus The specimens were obtained for the most part from root masses of the large aerial fern *Asplenium nidus*. They were common at Bunawan, Agusan Two were taken from the trunks of small trees which were tunneled by large black ants The species feeds on the larvæ of ants and centipedes It is known only from the type locality It appears to be related to *Typhlops cumingii* Gray but differs from it in having a longer tail, in the larger number of scale rows, and in having the preocular in contact with 2 labials instead of 1.

TABLE 8.—*Measurements and scale counts of Typhlops longicauda Taylor*

No	Length	Tail	Body width	Tail width	Body width in length	Tail width in tail length
	mm.	*mm.*	*mm.*	*mm.*		
100	348	31	6	4 9	58	6 1
101	(a)	20	5 5	4 25		6 1
108	180	16	4	2 7	46	6
102	314	27 5	6	4 5	52	6 1
103	(b)	31		5		6 2
104	286	23	5	3 7	57	6 2
105	210	18	4	3 2	52	5 7
106	235	22	5	3 6	47	6 1
107	286	26	6	4 2	48	6 2
98	316	30 5	6	5	53	6 1
99	340	31 6	6	4 75	56 6	7 2

No	Nasal divided	Nasal suture arises	Scale rows	Preocular touches second labial	Collection
100	Yes	2d labial	26	Yes	E H Taylor
101	Yes	do	26	Yes	Do
108	Yes	do	26	Yes	Do
102	Yes	1st labial	26	Yes	Do
103			26		Do
104	Yes	1st labial	26	Yes	Do
105	Yes	do	26	Yes	Do
106	Yes	do	26	Yes	Do
107	Yes	do	26	Yes	Do
98	Yes	do	26	Yes	Do
99	Yes	do	26	Yes	Do

[a] Mutilated [b] Tail only [c] Type

TYPHLOPS MINDANENSIS sp nov

Type.—No. 96, E H. Taylor collection, collected at Bunawan, Agusan, Mindanao, August 12, 1913, by E H Taylor.

Description of type.—Head somewhat wedge-shaped, slightly rounding to the rather sharp horizontal edge, below sloping abruptly to mouth. The anterior edge of snout rounding and not broken in outline; rostral above moderate, about as wide as long, about one-third the width of head between eyes, not reaching to level of eyes, below, the enlarged part of rostral wider than deep; prefrontal much enlarged, much wider than deep, separating nasals by a distance equal to more than a fourth of its width, deeper and more than one and a half times as large as frontal, larger than interparietal or supraocular, and separated from preocular by a distance less than that between

nasals; the frontal, the smallest head scale, about as wide as deep or a little wider, separated from ocular by a distance less than that between prefrontal and preocular; supraocular forms its shortest suture with parietal, its longest with ocular, and is narrowly distant from edge of eye, parietals enlarged, their anterior part widest, about two and a half to three times as long as wide, interparietal larger than frontal, much wider than deep, followed by a scale twice as wide as deep; 2 scales border parietals behind, slightly larger than the following body scales; nasal not completely divided by nasal cleft, which issues from a point above first interlabial suture; a small pitlike depression below each nostril; 3 labials in contact with nasal below, nasal narrows above the end curving to a point, preocular present, very much narrower and much shorter than either nasal or ocular, its edge reaching edge of eye, in contact with a single labial below, narrowing to a point above; ocular large, touching 2 labials below; eye distinct, with pupil showing, 3 slightly enlarged postoculars; 4 upper labials, chin covered with slightly enlarged scales, about 8 or 9 between angles of mouth; 27 scale rows about neck, 26 about anterior part of body, 24 in front of anus, anterior part of median ventral scale row has more or less enlarged scales; 35 scales in a longitudinal row from anus to tip of tail, body width in total length, 53, tail width in tail length, 3.8; tail length in body length, 17

Color in life.—Above grayish to brownish yellow, this color covering upper 13 scale rows, each scale with a large, dimly defined, lighter area on its tip, below lighter brownish yellow; to the eye the color appears nearly uniform; the area about and below the nostril and upper labials lighter than rest of head

Measurements of Typhlops mindanensis sp nov

	mm
Total length, body severed	318
Tail	18
Width of body	6
Width of tail	4 66

Remarks.—Only the type was taken Apparently it has no close affinity among the other Philippine species (See remarks under *T rugosa*.)

TYPHLOPS CUMINGII (Gray)

Onychophis cumingii GRAY Cat Liz Brit Mus (1845) 133.
Onychocephalus cumingii BOETTGER, Ber Senck Nat Ges (1886) 104
Typhlops cumingii BOULENGER, Cat Snakes Brit Mus 1 (1893) 51, pl 3, fig 4, GRIFFIN, Philip Journ Sci § D 6 (1911) 255

Description of species.—(From Boulenger.) "Snout very prominent, with a narrow, subcrescentic sharp transverse edge and inferior nostrils. Rostral large, its upper part longer than broad and about half the width of the head, not extending to the level of the eyes, its lower part as broad as long; nasal completely divided, the cleft proceeding from the second labial; præocular present, narrower than the nasal or the ocular, in contact with the third labial only; præfrontal not enlarged, parietals broad; eyes distinct; four upper labials. Diameter of body 48 to 52 times in the total length; tail four or five times as long as broad, ending in a spine. Twenty-four scales round the body. Olive-brown above, yellowish inferiorly.

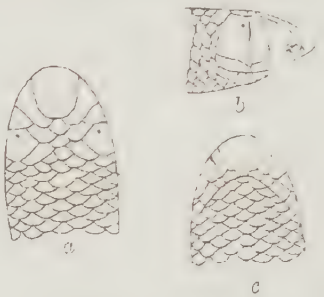


Fig. 4. *Typhlops cumingii* (Gray), after Boulenger, *a*, head, dorsal view; *b*, head, lateral view; *c*, head, ventral view.

'Total length 365 millim.'

Remarks.—I have been unable to find this species. The newly described *Typhlops longicauda* is related to but apparently distinct from it.

BOIDÆ

Boidæ, part, Gray, Zool. Misc. (1842) 41, Cat. Vip. Snakes (1849) 82.
Boidæ Boulenger, Cat. Snakes Brit. Mus. 1 (1893) 71.

'Maxillary, palatine, and pterygoid movable; transpalatine present; pterygoid extending to quadrate or mandible; supratemporal present, attached scale-like to cranium, suspending quadrate, præfrontal in contact with nasal. Mandible with coronoid bone. Teeth in both jaws. Vestiges of pelvis and hind limbs, usually terminating in a claw-like spur visible on each side of the vent." (*Boulenger*.)

This family is divided into two subfamilies, the Pythoninæ and Boinæ; the snakes of the former are characterized by the presence of a supraorbital bone, those of the latter by the absence of a supraorbital bone and of premaxillary teeth. The Pythoninæ are confined largely to the Old World. A single genus is found in Mexico. The Boinæ, on the other hand, are distributed over both hemispheres, the larger number of genera occurring in the Western Hemisphere. The genera *Corallus* and *Boa* are found in both America and Madagascar; *Casarea*

and *Boiera* are known only from a small island in the Indian Ocean. *Enygrus*, which is distributed over Polynesia and Papuasia, approaches our territory in Celebes and the Moluccas

PYTHONINÆ

Supraorbital bone present.

Nardoa, Liasis, Chondropython, and *Python* occur in the East Indian and Australian regions, but only the last is known to enter the Philippines

Genus PYTHON Daudin

Python DAUDIN, Hist Rept 5 (1803) 226, WAGLER, Syst Amph. (1830) 168, SCHLEGEL, Phys Serp 2 (1837) 402, DUMÉRIL and BIBRON, Erp Gen 6 (1844) 392, GRAY, Cat Vip Snakes (1849) 87, GUNTHER, Rept Brit India (1864) 329, JAN, Icon Gén. Ophid (1864) 95, BOETTGER, Ber Senck Nat Ges (1886) 115, BOULENGER, Fauna Brit India, Rept (1890) 245, Cat Snakes Brit Mus 1 (1893) 81, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 439, GRIFFIN, Philip Journ Sci § D 6 (1911) 255

Constrictor WAGLER, Syst Amph (1830) 168

Moncha GRAY, Zool Misc (1842) 48, DUMÉRIL and BIBRON, Erp Gén 6 (1844) 388

Aspidoboa SAUVAGE, Bull Soc Philom VII 8 (1884) 143

Hypaspistes OGILBY, Rec Aust Mus 1 (1891) 193

"Præmaxillary bone toothed Anterior maxillary and mandibular teeth very long, gradually decreasing in size. Head distinct from neck; end of snout covered with shields, upper surface of head with symmetrical shields or small scales; nostril directed upwards or supero-lateral, in a large semidivided nasal, which is separated from its fellow by a pair of internasals; rostral and anterior upper labials with deep pits; some of the lower labials also pitted Eye moderate, with vertical pupil. Body more or less compressed; scales small, smooth Tail moderate or short, prehensile; subcaudals all or greater part in two rows" (*Boulenger*)

The genus is widely distributed over Africa, southeastern Asia, Papuasia, and Australia Only the widely distributed *Python reticulatus* (Schneider) is known to occur in the Philippines

PYTHON RETICULATUS (Schneider)

Boa reticulata SCHNEIDER, Hist. Amph 2 (1801) 264, Denkschr Ak Munch 7 (1821) 118, DAUDIN, Hist Rept 5 (1803) 116

Boa rhombeata SCHNEIDER, Hist. Amph 2 (1801) 266

Boa phrygia SHAW, Zool 3 (1802) 348, pl 97

Coluber javanicus SHAW, Zool 3 (1802) 441

Python schneideri MERREM, Tent Syst Amph (1820) 89, BOIE, Isis (1827) 515, GUERIN, Icon Reg Anim., Rept., Pl 21 fig 1, SCHLEGEL, Phys Serp 2 (1837) 415, pl 15, figs 5–7

Python reticulatus GRAY, Zool Misc (1842) 44; DUMÉRIL and BIBRON, Erp. Gén 6 (1844) 426, CANTOR, Cat Mal Rept. (1847) 55; GRAY, Cat Vip Snakes (1849) 87, PETERS, Mon Berl Ak (1861) 689, GUNTHER, Rept Brit India (1864) 330, JAN, Icon Gen (1864) 97, pl 6, STOLICZKA, Journ As Soc Bengal 39 (1870) 205, MARTENS, Preus Exped O Asien Zool 1 (1876) 197, THEOBALD, Cat Rept Brit India (1876) 205, BOETTGER, Ber Senck Nat Ges (1886) 115, BOULENGER, Fauna Brit India, Rept (1890) 246, Cat Snakes Brit. Mus 1 (1893) 86, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 439, GRIFFIN, Philip Journ Sci § D 6 (1911) 255, TAYLOR, Philip Journ Sci § D 12 (1917) 355

Description of species.—(From No 426, Bureau of Science collection, collected on Polillo Island, October, 1909, by C Canonizado). Rostral higher than wide, visible from above, with 2 deep, curved, elongate pits; 2 regular internasals, longer than wide, their mutual suture distinctly shorter than those formed with nasals, their suture with rostral about equal to suture between nasal and rostral; nasals roughly triangular, nostril pierced posteriorly; a deep suture enters nostril from above, which nearly divides the scale into two parts; 2 large regular prefrontals, widest along their mutual suture, very much larger than internasals, in contact with posterior part of nasal and with a scale which is intercalated between preocular and prefrontal; the latter scale lies diagonally, is rather rectangular in shape, and is in contact with frontal, supraocular (on one side), preocular and 2 loreals (broken into two parts on right side); frontal divided, smaller than prefrontals, lying between and somewhat anterior to eyes; supraocular large, about as wide as long; 3 loreal scales, the anterior lying between nasal and third labial, touching second and third labials, second loreal largest, touching 3 labials, third smallest, touching only fifth labial; 2 preoculars, upper very large, three or four times the size of lower, and in contact with fifth and sixth labials; lower touching sixth and seventh labials, 13 upper labials, the seventh, largest, entering eye; first 4 with deep pits diagonally elongate; 2 postocular scales in parietal region, small, very irregular, larger than body scales; temporals slightly smaller, mental small, triangular, 23 lower labials, first 11 much elongated, second, third, and fourth with small round pits, thirteenth to nineteenth inclusive pitted with rounded pits, chin shields small, indistinguishable, mental groove not especially distinct; scales on body small, the median dorsal rows smallest, in 77 rows around widest part of body; the scales in the row bordering ventrals several times larger than those on middle of back, ventrals 324, rather narrow, subcaudals 91, in 2 rows, anal single, on either side of anus a small ex-

truding claw on tip of leg bone (more prominent in males), eyes small, pupil vertical

Color in life.—Yellowish gray to yellowish brown above, highly iridescent, with a continuous, chainlike, zigzag marking of blue-black inclosing irregular, rhomboidal, gravish yellow spots, the black color surrounding these spots is rarely more than three scales wide, on each side a second series of small white spots inclosed by the dark color at the point where the rhombs are widest, these in turn are connected by narrow marks to a dim series of markings running along the outer edge of the ventrals and the scales bordering the ventrals, ventrals dimly blotched with grayish black; a narrow, black, median line from upper tip of rostral to the dorsal markings on neck, a temporal streak from eye to lateral neck marking, a small isolated dot of black on each side in the parietal region, chin and throat whitish, ventrals for the most part yellowish white to cream.

Measurements of Python reticulatus (Schneider) (young)

	mm
Total length	2,075
Snout to anus	1,797
Tail	278
Width of head	45
Length of head	70

Variation.—The number of scale rows around the body varies greatly at the various parts of the body; in Philippine specimens the variation of the number of rows in the widest part is from 74 to 78, of the ventrals, 317 to 335; and of the subcaudals, 80 to 93*.

The number of upper labials varies from 10 to 13, of lower labials from 20 to 23. In all specimens examined the first 4 upper labials were pitted, the second, third, and sometimes the fourth lower labials were pitted with small rounded pits, the thirteenth to eighteenth lower labials were usually pitted. The number of postoculars is variable, as few as 2 scales, and as many as 5 occur. The seventh labial almost invariably enters the eye.

The scales on the head are variable, particularly the element lying between the prefrontals and the preocular, which is frequently broken, the frontal is usually divided in Philippine specimens, and frequently the anterior part is broken.

* According to Boulenger's Catalogue the range of ventrals is as follows: Scale rows, 69 to 79, ventrals, 297 to 330, subcaudals, 78 to 102.

The color of the young is similar to that of the adult. The belly frequently assumes a bright orange color. In very young specimens there are often black dots on either side of the median black line on the head

Remarks.—This snake attains a length of at least 9 meters It is not at all improbable that specimens of larger size are occasionally found All records of specimens longer than 8 or 9 meters should be verified beyond a doubt, for it must be remembered that the skin is elastic and can be stretched considerably when freshly removed from the snake Measurements of skins therefore are not necessarily authentic for those of the living snake

Superstitious beliefs are probably more common regarding this snake than any other in the Philippines. Fabulous stories are told of its size; of snakes 20 to 30 meters in length having been killed or seen, with body height that of a man, or of grown carabaos having been eaten whole by a single reptile

That these large constrictors of 8 or 9 meters can easily kill a man or smaller animals is evident from their strength and size There are on record a few cases of such occurrences, but they are rare. It is possible that they could kill a carabao if coiled about the neck, but that a snake could eat one is absurd

Many regard this snake as poisonous which, needless to say, it is not The flesh is white and is relished by many Filipinos. Many of the rural people have young specimens in their houses for protection from rats

They feed on a great variety of animals, preferring smaller mammals and the young of certain of the larger ones, such as monkeys, deer, pigs, dogs, goats, as well as birds and fowls. In captivity they do very well and are probably kept as menagerie specimens more commonly than is any other snake, *Boa constrictor* of South America not excepted Specimens kept in the Bureau of Science Aquarium are fed a small goat once each month

Specimens are most frequently taken along rivers and they appear to be somewhat aquatic in their habits They usually live in hollow trees, in hollow trunks of fallen trees, in holes in the banks of streams, or in caves They lay their eggs usually in the hollow trunks of fallen trees and incubate them by encircling them with the coils of the body

The species is found on all the larger Philippine islands and probably most of the smaller ones. It is known from Luzon,

Mindoro, Polillo, Panay, Negros, Cebu, Bohol, Leyte, Samar, Palawan, Mindanao, and Basilan It was reported as occurring in Jolo and Tawitawi, but I was unable to verify these last two localities. Outside of the Philippines it is known in Burma, Cochin China, Siam, Malay Peninsula, Borneo, Sumatra, Java, Celebes, Timor, and the Moluccas.

TABLE 9.—*Measurements and scale counts of Python reticulatus (Schneider)*

No.	Locality	Collector	Age	Length	Tail	Head width	Head length	Ventrals	Subcaudals
				mm	mm	mm	mm		
68	Mindanao	E H Taylor	yg	689	96	21	33	320	80
64	do	do	yg	915	120	23	39	335	81
330	do	do	yg	870	126	24	38	325	92
125	Polillo	C Canonizado	---	2,237	260	48	75	317	88
426	do	do	yg	2,175	278	46	70	324	91
427	Manila	do	yg	2,462	285	50	79	323	82
429	do	do	yg	1,560	185	32	64	322	79
472	Mindanao	E H Taylor	yg	1,572	190	33	65	328	89
520	Polillo	C Canonizado	yg	865	120	22	38	323	91
5113	Mindanao	E H Taylor	yg	1 044	150	27	44	317	93

No.	Anals	Labial entire eye	Loreals	Upper labials	Upper labials pitted	Lower labials	Lower labials pitted	Preoculars	Postoculars	Scale rows	Collection
68	1	7	3	10-11	1-4	21-23	13-17	2	4-5	76	F H Taylor
64	1	7	3	13-13	1-4	23-23	13-18	2	3-4	74	Do
330	1	7	3	13-13	1-4	23-23	13-18	2	3-4	77	Do
425	1	7	3	13-13	1-4	21-21	13-18	2	3-3	80	Bureau of Science
426	1	7	3	13-13	1-4	21-22	13-18	2	2-2	77	Do
427	1	7	3	12-13	1-4	23-23	13-18	2	3-3	80	Do
429	1	7	3	13-13	(a)	------	------	2	3-3	78	Do
482	1	7	3	13-13	1-4	22-23	13-18	2	3-3	76	Do
520	1	6	3	12-12	1-4	21-20	11-15	2	3-3	81	Do
5113	1	7	3	14-14	1-4	22-22	13-18	2	2-2	71	E H Taylor

[a] Head mutilated

XENOPELTIDÆ

Imbricatæ, part, BOIE, Isis (1827) 510

Tortricidæ, part, JAN, Elenco Syst. Ofid (1863) 18

Xenopeltidæ COPE, Proc Acad Nat. Sci Philadelphia (1864) 230; GUNTHER, Rept Brit India (1864) 180, COPE, Proc Am Phil Soc 23 (1886) 482, BOULENGER, Fauna Brit India, Rept (1890) 275, Cat. Snakes Brit Mus 1 (1893) 167

Cranial bones more or less solidly united; transpalatine present; pterygoid extending to quadrate; prefrontal in contact with nasal Mandible without coronoid bone. Teeth in jaws, palate, and premaxillary

This family contains one genus and one species.

Genus XENOPELTIS Reinwardt

Xenopeltis REINWART, in Boie, Isis (1827) 564, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 28, GUNTHER, Rept Brit India (1864) 180, JAN, Icon Gén (1865) 57, BOULENGER, Fauna Brit India, Rept. (1890) 276, Cat Rept Brit Mus 1 (1893) 167, fig 10

Tortrix, part, SCHLEGEL, Phys Serp 2 (1837) 1

"Teeth small, equal, closely set, and very numerous (4 on each side of the præmaxillary, 33–38 in each maxillary, 35 or 36 in each ramus of the mandible) Dentary bone attached loosely to the apex of the articular and movable on it. Head not distinct from neck; eye small, with vertically elliptic pupil Nostril between two small nasals, frontal in contact with a large ag[z]ygous interparietal shield, which is in the middle between four parietals A mental groove. Body cylindrical; scales smooth, in 15 rows; ventrals large; tail short, subcaudals in two rows." (*Boulenger.*)

This genus has a single known species, *Xenopeltis unicolor* It attains a length of at least 1 meter. It is rare in the Philippines and is probably confined to Palawan and the Sulu Archipelago. Known also in southern Asia and the Malay Archipelago

XENOPELTIS UNICOLOR Reinwardt

PLATE 2

Xenopeltis unicolor REINWARDT, Boie, Isis (1827) 564; CANTOR, Cat Mal Rept (1847) 54, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 28, GUNTHER, Rept Brit India (1864) 180; JAN, Icon Gén 57 (1865) 1, 9, pl 5, THEOBALD, Cat Rept Brit. India (1876) 140; BOULENGER, Fauna Brit India, Rept. (1890) 276, fig 85, Cat Snakes Brit Mus 1 (1893) 168, fig 10, BARBOUR, Mem Mus Comp Zool Harvard Coll 44 (1912) 106, GRIFFIN, Philip Journ Sci. § D 13 (1918) 259

Xenopeltis concolor REINWARDT, in Boie, Isis (1827) 564

Xenopeltis leucocephala REINWARDT, in Boie, Isis (1827) 564

Tortrix xenopeltis SCHLEGEL, Phys Serp 2 (1837) 20, pl. 1, figs 8–10, Abbild (1844) pl 35

Description of species.—(From No. 738, Bureau of Science collection; collected at Iwahig, Palawan, January 8, 1909, by C. M. Weber.) Head much flattened, somewhat wedge-shaped, not distinct from neck; snout rounded; scales on head imbricate;

rostral wider than high, visible from above, pointed behind; internasals small, wider than deep, narrowed medially, the suture between them about one-third that between prefrontals; prefrontals longer than wide, rounding behind, their mutual suture longest, their shortest suture with posterior nasal, frontal as wide as long, equal in length to its distance from end of snout; parietals broken into 5 scales, none as large as frontal, but the 3 bordering frontal largest; interparietal a little larger than anterior or posterior parietals, a sixth scale borders interparietal behind and is smallest, a little larger than body scales; nasal divided, nostril nearly surrounded by anterior part, posterior part largest; loreal (or preocular) very large, broadly entering eye and forming a broad suture with frontal, bordered by 2 labials below, supraocular present, very small, less than one-eighth the size of frontal, less than either of the 2 postoculars; 2 anterior temporals, the lower in contact with both postoculars, the upper with one, 3 posterior temporals; 8 upper labials, fourth and fifth entering eye (only the fourth on the left side); first labial in contact with internasal, 8 lower labials, 3 in contact with the single pair of chin shields; scales in 15 rows, smooth, without apical pits, the median dorsals smallest, the outer scale row largest and ventral; ventrals, 178, comparatively narrow; anal divided; subcaudals, 29; the scale immediately in front of anal scale much enlarged, and the subcaudal scale behind anus single

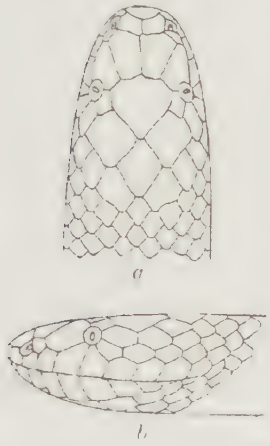


FIG 3 *Xenopeltis unicolor* Reinwardt after Boulenger, *a* head, dorsal view *b* head lateral view

Color in alcohol.—Above purplish brown, each scale lighter on the edges, the light color becoming more pronounced laterally and appearing as longitudinal dotted lines, the second outer row of scales has only a dim brownish spot on each scale; the first row has no dark color, but is yellowish, lower labials with brownish purple spots on each scale, dark spots on chin shields, belly immaculate; underside of tail with large purplish spots for more than half its length; a broad, dim, lighter nuchal collar

Measurements of Xenopeltis unicolor Reinwardt

	mm
Total length	730
Tail	84
Width of head	15
Length of head	25

Variation.—Practically no variation is evident in color or marking save that in the young the purple is more pronounced and the collar is almost pure yellowish white. The specimen here described is abnormal in having only the fourth labial entering the eye on one side, and only minutely on the other side. The fourth and fifth labials enter the eye in all specimens examined except one (No. 736, Bureau of Science collection) in which the fourth labial alone enters the eye on one side. Boulenger * gives the range of ventrals as 166 to 193; of subcaudals, 26 to 31. It is significant that in the six specimens listed in the attached table the subcaudal count is identical.

TABLE 10.—*Measurements and scale counts of Xenopeltis unicolor Reinwardt*

No.	Sex	Locality	Collector	Length	Tail
				mm.	mm.
734	♂	Iwahig, Palawan	C. M. Weber	415	45
735	♂	do	do	365	42
736	♀	do	do	672	80
737	♀	do	do	855	80
738	♀	do	do	735	84
739	♂	do	do	610	65

No.	Ventrals	Subcaudals	Upper labials	Lower labials	Scale rows	Labials enter eye	Collection
734	181	29	8	8	15	4, 5	Bureau of Science
735	179	29	8	8	15	4, 5	Do.
736	177	29	8	8	15	$\{\frac{4}{4}\ \frac{5}{}\}$	Do.
737	174	29	8	8	15	4, 5	Do.
738	178	29	8	8	15	$\{\frac{4}{4}\ \frac{5}{}\}$	Do.
739	181	29	8	8	15	4, 5	Do.

Remarks.—The species was discovered in the Philippines by Mr. C. M. Weber in Palawan, and was first recorded by Griffin.†

* Cat. Snakes Brit. Mus. 1 (1893) 168.

† Loc. cit.

I obtained a specimen on Bongao Island, Sulu Archipelago. This specimen is of a dark slate or bluish slate color, otherwise it agrees fairly well with the Palawan specimens It is known in the Philippines from these two localities only Outside of the Philippines it is known from India, Burma, Siam, Malay Peninsula, Nias, Borneo, Celebes, Sumatra, and Java In the Philippines it is rare, as it is said to be in Java also *

NATRICIDÆ

"Facial bones movable, præfrontal not in contact with nasal; transpalatine present; pterygoid extending to mandible or quadrate, supratemporal present, attached scale-like to the skull and suspending quadrate, maxillary horizontal, not movable perpendicularly to the transpalatine. Mandible without coronoid bone. Both jaws toothed." (*Boulenger.*) †

The family is divided into the following subfamilies: Acrochordinæ, Natricinæ, Rachiodontinæ, Homalopsinæ, Coronellinæ, Boiginæ, Elachistodontinæ, and Langahinæ Representatives of six of these subfamilies are to be found in the Philippines, and they may be distinguished as follows.

Key to the Philippine subfamilies of the Natricidæ

a^1 Hypapophyses present throughout the vertebral column
  b^1 All maxillary teeth solid
    c^1 Postfrontal bone produced over the supraorbital region, scales not or but slightly imbricate . Acrochordinæ (p 76)
    c^2 Postfrontal bone not produced over the supraorbital region, scales imbricate Natricinæ (p 78)
  b^2 Posterior maxillary teeth grooved
    c^1 Nostrils valvular, on upper side of snout Homalopsinæ (p 110).
    c^2 Nostrils not valved, lateral Langahinæ (p 116)
a^2 Hypapophyses absent in posterior dorsal vertebræ
  b^1 All maxillary teeth solid Coronellinæ (p 117)
  b^2 Posterior maxillary teeth grooved Boiginæ (p 195)

The Natricinæ and the Coronellinæ constitute the bulk of the harmless Philippine snakes. The two subfamilies together are equivalent to Boulenger's family Colubridæ

ACROCHORDINÆ

Acrochordinæ BOULENGER. Fauna Brit India, Rept (1890) 354, Cat Snakes Brit. Mus 1 (1893) 172

"Postfrontal bone produced over the supraorbital region. Maxillary and dentary bones armed with solid teeth along their

* Barbour, loc cit., Schlegel, loc cit

† Boulenger's definition of the Colubridæ, from Cat Snakes Brit Mus. 1 (1893) 169

whole length; palatines and pterygoids toothed Hypapophyses developed throughout the vertebral column Scales not or but slightly imbricate." (*Boulenger.*)

This subfamily, consisting of several genera, is distributed over southeastern Asia, the East Indies, and Central America Only *Chersydrus* is known in the Philippines *Xenodermus*, *Acrochordus*, *Stoliczkaia*, and *Anoplohydrus* enter the East Indies, the first with a single species extending from Siam and the Malay Peninsula to New Guinea; the second extending from the Malay Peninsula to Java and Sumatra; the third has been found in Borneo, but is apparently absent from the other East Indian islands; and the fourth is from Sumatra It is significant that most of these genera are monotypic.

Genus CHERSYDRUS Cuvier

Hydrus, part, SCHNEIDER, Hist Amph 1 (1799) 243
Chersydrus CUVIER, Reg Anim 2 (1817) 75, GRAY, Cat Vip Snakes (1849) 60, DUMÉRIL and BIBRON, Erp. Gén 7 (1854) 40; GUNTHER, Rept Brit India (1864) 336; BOETTGER, Ber Senck Nat Ges (1886) 115; BOULENGER, Fauna Brit India, Rept (1890) 355, Cat Snakes Brit Mus 1 (1893) 173
Acrochordus, part, SCHLEGEL, Phys Serp. 2 (1837) 424
Potamophis, part, SCHMIDT, Abh. Naturw Hamb 2 (1852) 75.

"Teeth subequal, 12 to 15 in each maxillary Head not distinct from neck, small, covered with granular, juxtaposed scales, nostrils close together on the top of the snout; eye very small, with vertically subelliptic pupil. Body stout, compressed; scales very small, juxtaposed, rhomboidal, with a short tubercle-like keel, spinose on the belly, no ventral shields; a fold of the skin running along the median line of the abdomen Tail short, compressed, prehensile, scaled like the body." (*Boulenger*)

For the distribution of the family see that of the single species

CHERSYDRUS GRANULATUS (Schneider)

PLATE 8, FIG 1

Hydrus granulatus SCHNEIDER, Hist Amph. 1 (1799) 243
Acrochordus fasciatus SHAW, Zool 3 (1802) 576, pl 130; SCHLEGEL, Phys Serp 2 (1837) 429, pl 14, figs 14–16
Pelamis granulatus DAUDIN, Rept 7 (1803) 370
Acrochordus granulatus CANTOR, Cat Mal Rept (1847) 59.
Chersydrus granulatus GRAY, Cat Vip Snakes (1849) 61, GUNTHER, Rept Brit India (1864) 336, THEOBALD, Cat Rept Brit India (1876) 186, BOULENGER, Fauna Brit India, Rept (1890) 355, fig, Cat Snakes Brit Mus 1 (1893) 174, GRIFFIN, Philip Journ Sci § D 6 (1911) 255
Chersydrus annulatus GRAY, Cat Snakes (1849) 61
Potamophis fasciata SCHMIDT, Abh Naturw. Hamb 2 (1852) 75
Chersydrus fasciatus DUMERIL and BIBRON, Erp Gén 7 (1854) 41

Description of species.—(From No. 773, Bureau of Science collection, collected in Manila Bay.) Head narrow, not distinct from neck, eyes small; body compressed; rostral wanting or reduced greatly; no regular head scales, nostrils nearly as large as eyes, valvular, separated from each other by a single narrow scale, the row of scales above the row bordering mouth largest, anterior row of scales on lower jaw broken into two deep grooves, scales adjoining the scale row bordering mouth much enlarged; no distinct chin shields; eye surrounded by about 11 small scales, about 11 scales in a row between eyes, scales small, juxtaposed, tubercled, about 100 rows around widest part of body, those on back two or three times as large as lateral scales, no ventral shields, scales along ventral surface form a small, finely serrated fold, tail short, rather compressed, no subcaudals, neck and head less than half as deep as greatest depth of body.

Color in life.—Above lead color with lateral indistinct markings of yellowish white, very slightly evident dorsally, the slight ventral fold whitish, terminating in a larger white spot under chin; dim light markings in occipital region; anal region white, no line under tail.

Measurements of Chersydrus granulatus (Schneider)

	mm.
Total length	785
Snout to vent	703
Tail	82
Width of head	14
Length of head	20
Depth of neck	15
Greatest body depth	35

Variation.—The young are blackish brown, very distinctly marked on the sides with white transverse bars, which usually fail to join dorsally, the white bars are widest laterally; the head has two small white dots between and anterior to the eyes, a row of larger white dots across the occipital region.

Remarks.—The species attains a length of 1 meter or more. It is extremely common along the shores and fresh-water streams near the seacoast. Females give birth to as many as ten young at one time. The species is entirely harmless.

NATRICINÆ

Hypapophyses present throughout the vertebral column. All maxillary teeth solid, the postfrontal bone not produced over the supraorbital region. Scales imbricate. Teeth on the entire length of the maxillary and dentary bones.

*Key to the Philippine genera of the Natricinæ.**

a^1. Subcaudals double, maxillary teeth equal, or last two or three enlarged
- b^1. Eye small, pupil round, scales smooth, without apical pits, snout obtuse . . Sibynophis Fitzinger (p 79)
- b^2 Eye large, pupil round, scales nearly all keeled, usually with apical pits, snout obtuse Natrix Laurenti (p 82)
- b^3 Eye moderate, pupil vertically elongate, snout pointed, scales smooth, no apical pits Oxyrhabdium Boulenger (p 99)

a^2 Subcaudals single, anterior maxillary teeth enlarged and separated from those following by a short interspace eye moderate pupil round, snout obtuse, scales smooth, without apical pits Cyclocorus Duméril and Bibron (p. 105)

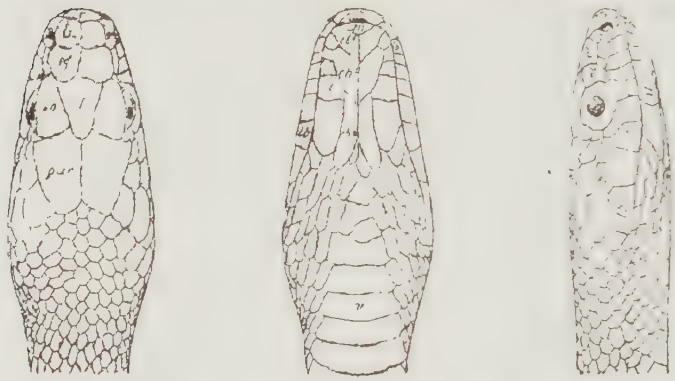


Fig 6 Typical Natricinæ head after Griffin *Dendrelaphis terrificus* (Peters) from Griffin's figure of *D cæruleatus*, *ch*, chin shield, *f*, frontal *il* inferior labial, *in* internasal *lb* superior labial *lo*, loreal *m* mental, or symphysial *n*, nasal *par*, parietal *pf*, prefrontal, *po*, preocular, *pto*, postocular, *r*, rostral, *so*, supraocular, *ta*, anterior temporal, *tp* posterior temporal, *v*, ventral

Genus SIBYNOPHIS Fitzinger

Sibynophis Fitzinger, Syst Rept (1843) 26, Stejneger, Proc U S Nat Mus 38 (1910) 102

Herpetodryas, part, Schlegel, Phys Serp 2 (1837) 173

Enicognathus Duméril and Bibron, Erp Gén 7 (1854) 328

Ablabes, part, Günther, Cat Col Snakes Brit Mus (1858) 27, Rept Brit India (1864) 223

Enicognathus, part, Jan, Arch Zool Anat Phys 2 (1863) 266

Hemicognathus Cope, Journ Acad Nat Sci Philadelphia 8 (1876) 138, part, Bocourt, Miss Sc Mex, Rept (1886) 625

Polyodontophis Boulenger, Fauna Brit India, Rept (1890) 391, Cat Snakes Brit Mus 1 (1893) 181, Griffin, Philip Journ Sci § D 6 (1911) 256

*The characters given here may not apply to extra-Philippine species of the genera

"Teeth very numerous and closely set, 30 to 50 in each maxillary, equal in size. Dentary bone completely detached from the articular posteriorly. Head short, not or but slightly distinct from neck; eye moderate or rather small, with round pupil. Body cylindrical, elongate, scales smooth, without apical pits, in 17 or 19 rows. Tail moderate or long; subcaudals in two rows. Hypapophyses developed throughout the vertebral column." (*Boulenger.*)

The occurrence in the Philippines of a species of this genus is somewhat unusual, as no other member of the genus appears to have been discovered in any of the East Indian islands. Species occur in Madagascar, Comoro Islands, southeastern Asia, and Central America; it offers a good example of discontinuous distribution.

The Philippine species, *Sibynophis bivittatus*, is small and harmless, it is not recognized by people in Busuanga as being a different snake from the poisonous *Doliophis bilineatus*, which occurs on the same island, the name *odto-odto* * being applied to both species. They regard both as deadly poisonous.

SIBYNOPHIS BIVITTATUS (Boulenger)

PLATE 10, FIG. 1

Polyodontophis bivittatus BOULENGER, Ann. & Mag. Nat. Hist. VI. 14 (1894) 82, Cat. Snakes Brit. Mus. 3 (1896) 597; GRIFFIN, Philip. Journ. Sci. § D. 6 (1911) 256.

Description of species.—(From an unnumbered specimen in Santo Tomás Museum, collected in Palawan, collector and date unknown.) Rostral twice as broad as high, only a very small part visible from above, forming its largest suture with internasals and its smallest with first labial, internasal large, apparently bordering nostril, about as broad as long, their mutual suture diagonal; prefrontals wider than long, also forming a diagonal mutual suture (left prefrontal broadly in contact with right internasal), in contact with and forming coequal sutures with posterior nasal, loreal, preocular, and supraoculars; frontal elongate, shield-shaped, not quite twice as long as broad, much longer than its distance to end of snout, as long as parietals or minutely shorter, wider and slightly longer than supraoculars; parietals longer than wide, in contact with both postoculars and 2 temporals, nasal divided, internasal bordering nostril; pos-

* This name is usually applied to species of *Typhlops*, chiefly *Typhlops braminus* in Negros and other Visayan islands. It is regarded by the Visayans as deadly poisonous.

terior nasal highest and largest; loreal as long as deep, smaller than preocular, latter much higher than wide, much wider at top than bottom; supraoculars twice as long as wide, 2 small postoculars, lower touching 2 labials, temporals, $2+1\frac{1}{2}$, lower anterior largest, wedged between sixth and seventh labials, 8 upper labials, last much the largest, third, fourth, and fifth entering eye, progressing in size from first, 8 lower labials, 4 touching first chin shields, which are longer and wider than second, eye rather large, ventrals, 145, anal divided, subcaudals, 93 in 2 rows; scales in 17 rows, smooth, without apical pits.

Color in alcohol.—Above dark reddish brown, which reaches laterally to outer row of scales but does not include them, two white stripes begin behind parietals and continue to extreme tip of tail, each stripe covering one scale row and parts of the two adjoining rows, ventrally immaculate yellowish white, a broad yellow area between eyes involving larger part of frontals and supraoculars, two small yellow spots on prefrontals, and one on each upper labial, some small yellow spots on parietals; chin dirty whitish.

Measurements of Sibynophis bivittatus (Boulenger)

	mm
Total length	460
Body to vent	299
Tail	161
Width of head	8

Variation.—There are three specimens in the Santo Tomás Museum, all from Palawan. Like the types in the British Museum, all save the described specimen have mutilated tails, which fact seems significant. The specimens agree with the type description save in the following characters. The ground color is dark reddish brown instead of black, and the color barely extends on the outer scale rows, and there are no spots on the ventrals. In two of the specimens the white lines continue to the eyes. In Busuanga, on the seashore, near the small settlement of Minuit, I recently captured a specimen having the following scale counts: Ventrals, 152; anal, divided; subcaudals, 106; upper labials, 8, lower labials, 9; scale rows, 17; fourth and fifth labials entering eye. The diagonal direction of the suture between the prefrontals is evident and leaves the left prefrontal in contact with the right internasal. This strange anomaly is present in all four specimens examined. I suspect that this is the normal condition, although it was not mentioned as occurring in the type.

Color in life.—Above black with two cream-white stripes beginning behind parietal and continuing to tip of tail; outer scale row slightly greenish gray instead of black, head reddish brown with a light interorbital stripe or blotch washed with salmon red, a few creamy white dots on parietals and pretrontals; each labial with a large paper-white spot; above labial spots darker; chin muddy white, below uniform greenish yellow.

Obviously this is a rare species. It closely resembles *Dolophis bilineatus* Boulenger and *Dryocalamus philippinus* Griffin, both of which are known to inhabit the Palawan group of islands.

TABLE 11.—*Measurements and scale counts of Sibynophis bivittatus (Boulenger)*

No.	Locality	Collector	Sex	Length vent	Ventrals	Upper labials	Preoculars	Postoculars	Labials touching eye	Collection
				mm						
	Palawan	Unknown		370	155	8	1	2	3, 4, 5	Santo Tomás
	do	do		260	146	8	1	2	3, 4, 5	Do
	do	do		(a)		8	1	2	3, 4, 5	Do
569	Busuanga	E. H. Taylor		280	152	8	1	2	4, 5	Bureau of Science

[a] Mutilated.

Genus NATRIX Laurenti

Natrix part, LAURENTI, Syn. Rept. (1768) 73.
Tropinotus KUHL, Isis (1822) 473.
Tropidonotus KUHL, Férussac, Bull. Sci. Nat. 2 (1824) 81, BOIE, Isis (1826) 205, BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 192.
Tropidonotus, part, SCHLEGEL, Phys. Serp. 2 (1837) 297, DUMÉRIL and BIBRON, Erp. Gen. 7 (1854) 549, GUNTHER, Cat. Col. Snakes (1858) 59, Rept. Brit. India (1864) 258, JAN, Arch. Zool. Anat. Phys. 3 (1865) 203, BOULENGER, Fauna Brit. India, Rept. (1890) 341.
Natrix BONAPARTE, Mem. Acc. Torin. II. 2 (1839) 436, COPE, Proc. U. S. Nat. Mus. 11 (1888) 392, 14 (1892) 667, STEJNEGER, Bull. U. S. Nat. Mus. 58 (1907) 263, 264.
Rhabdophis FITZINGER, Syst. Rept. (1843) 27.
Entainia, BAIRD and GIRARD, Serp. N. Am. (1853) 24, COPE, Proc. U. S. Nat. Mus. 14 (1892) 645.
Stenophis FITZINGER, Syst. Rept. (1843) 27.
Leptophis, part, DUMÉRIL and BIBRON, Erp. Gen. 7 (1854) 528.
Hydrophilophis SCHMIDT, Abh. Naturw. Ver. Hamburg, II. 2 (1852).
Nerodia BAIRD and GIRARD, Serp. N. Am. (1853) 38.
Regina BAIRD and GIRARD, Serp. N. Am. (1853) 45.

[a] Boulenger, loc. cit.

Amphiesma DUMÉRIL and BIBRON, Erp. Gen. 7 (1854) 724
Thamnophis COPE, Proc. Acad. Nat. Sci. Philadelphia (1860) 369
Bothrodytes COPE, Proc. Am. Phil. Soc. 23 (1886) 495
Ceratophallus COPE, Am. Nat. 27 (1893) 483
Diplophallus COPE, Am. Nat. 27 (1893) 483

"Maxillary teeth 18 to 40, posterior longest, mandibular teeth subequal. Head usually distinct from neck; eye rather small, moderate, or large, with round pupil. Body more or less elongate, cylindrical, scales mostly keeled, in some species smooth, usually with apical pits, in 15 to 33 rows; ventrals rounded. Tail moderate or long, subcaudals in two rows. Hypapophyses developed throughout the vertebral column." (*Boulenger*.)

This large genus is distributed over Central and North America, Europe, Asia, Africa, North Australia, the Malay Archipelago, and Japan.

In the Philippines seven species are known; one of these, *Natrix stolata* (Linnæus), reported by Peters from Calumpit, Bulacan Province, Luzon, I regard as doubtful.

Key to the Philippine species of Natrix Laurenti

a^1 Maxillary teeth not more than 30, last 2 or 3 abruptly enlarged
  b^1 Head moderately elongate, scales in 19 rows
    c^1 Single anterior temporal, third, fourth, and fifth upper labials entering eye, outer scale rows smooth. N. stolata (Linnæus) (p. 84)
    c^2 Two anterior temporals, fourth, fifth, and sixth upper labials entering eye, outer scale row feebly keeled. N. spilogaster (Boie) (p. 86)
    c^3 Two anterior temporals, 3 temporals entering eye, internasals as long as prefrontals, outer row of scales strongly keeled. N. chrysarga (Schlegel) (p. 87)
  b^2 Head short, very distinct from neck
    c^1 Scales in 17 rows, third, fourth, and fifth labials entering eye. N. auriculata (Günther) (p. 89)
    c^2 Scales in 19 rows
      d^1 Two anterior temporals, subcaudals, 96 to 101. N. cerebripunctata (Wiegmann) (p. 91).
      d^2 One anterior temporal, subcaudals, 64 to 71. N. lineata (Peters) (p. 92)
a^2 Maxillary teeth, 35 to 40, posterior but slightly enlarged, scales in 17 or 19 rows. N. dendrophiops Günther (p. 95)

The snakes of this genus, as the name suggests, are somewhat aquatic, they are usually found about moist or damp situations where there are frogs, since frogs form the largest part of their food. They are wholly harmless to man. *Natrix spilogaster* is frequently captured in Manila. It is probably the best known species owing to its presence about rice paddies.

NATRIX STOLATA (Linnæus)

Coluber stolatus Linnæus, Syst Nat 1 (1766) 379, Daudin, Rept 7 (1803) 161

Elaps bilineatus Schneider, Hist Amph 2 (1801) 299

Coluber bilineatus Daudin Rept 7 (1803) 165

Natrix stolatus Merrem, Syst Amph (1820) 123, Stejneger, Journ Sci Coll Tokyo 12[8] (1898) 221, Bull U S Nat Mus 58 (1907) 280 (in syn.)

Tropidonotus stolatus Boie, Isis (1827) 535, Schlegel, Phys Serp 2 (1837) 317, Cantor, Cat Mal Rept (1847) 90, Peters, Mon Berl Ak 2 (1861) 686, Gunther, Rept Brit India (1864) 226, Swinhoe, Ann & Mag Nat Hist III 12 (1863) 225, Theobald, Cat Rept Brit India (1876) 177, Anderson, An Zool Res Yunnan (1879) 816, Murray, Zool Sind (1884) 379, Boettger, Ber Offenb Ver Nat (1888) 79, Boulenger, Fauna Brit India, Rept (1890) 348, fig., Cat Snakes Brit Mus 1 (1893) 253, Wall, Proc Zool Soc London (1903) 86

Amphiesma stolatum Duméril and Bibron, Erp Gén 7 (1854) 727

Description of species.—(From Stejneger, Bull U. S. Nat Mus.) "Rostral much broader than high, well visible from above; internasals slightly shorter than the prefrontals, very narrow in front, their suture with rostral considerably shorter than suture between rostral and first labial, prefrontals in contact with supraoculars; frontal longer than its distance from tip of snout and interparietal suture; parietals equaling the distance of eye from tip of snout, nostril large, between two subequal nasals, loreal somewhat longer than high, upper edge shorter than and parallel with lower, one preocular, not in contact with frontal, 3 postoculars, temporals 1 + 2; supralabials 8, third, fourth, and fifth entering eye, sixth and seventh largest; 5 lower labials in contact with anterior chin-shields which are shorter than the posterior, 19 rows of scales, strongly keeled except outer row, and without apical pores, 149 ventrals, anal divided; 81 pairs of subcaudals.

"*Color (in alcohol).*—Above brownish gray with numerous narrow black crossbars alternating on each side of the median line anteriorly but continuous farther back, across this pattern two longitudinal, dorso-lateral pale bands occupying the whole of sixth scale row and the adjacent halves of fifth and seventh rows, posteriorly these bands are nearly uniformly pale, but anteriorly they exhibit a kind of chain pattern, inasmuch as the outer edges of the middle scale row are black except where the band intersects as black crossbar; below the lateral band many small irregularly alternating black spots, top of head with obscure dusky edges to the shields, no nuchal collar, supra-

labials whitish, the light color extending upward on the preocular and the lower postoculars, the vertical edges of the labials heavily margined with black as are also the preocular in front and the postoculars behind, the vertical, black edged, white bar in front of the eye being very characteristic; underside uniform whitish, each ventral with a black mark near the outer edge"

Measurements of Natrix stolata (Linnæus)

	mm.
Total length	522
Snout to vent	382
Vent to tip of tail	140

Variation.—Boulenger gives the ranges of ventrals and subcaudals as 120 to 161 and 50 to 89, respectively Those recorded by Stejneger * from Formosa are ventrals, 142 to 150; subcaudals, 65 to 81

Remarks—I have at hand a snake (No. 169, Bureau of Science collection) from Batan Island, just south of Formosa, which I have hesitated to refer to this species It differs somewhat from the typical form There are two preoculars, a single anterior temporal, and on one side the upper part of the seventh labial is broken, forming an anomalous scale. There is a light area in front of the eye, and the belly is spotted with small dark dots.

Unfortunately there is but a single specimen from this locality, and this a very young one. It would appear to be the "missing link" between *Natrix stolata* and *N spilogaster* In the coloration of the belly it agrees with the latter, in the presence of a single anterior temporal, with the former. I am unable to determine with certainty the presence or absence of apical pits.

A specimen of *Natrix spilogaster* which I collected at Baguio has a single anterior temporal, but there are two very small scales inserted between this and the sixth labial Only the fourth and fifth labials enter the eye The spotting on the belly is not so distinct as in the Batan specimen, and the outer row of scales is quite smooth; there are 159 ventrals, the tip of the tail is missing; there are two preoculars, and apical pits are present.

In two specimens of *Natrix spilogaster* in the Bureau of Science collection (Nos 182 and 204) there is but a single anterior temporal present, but it is noticeably widened, suggesting a fusion of two scales. A third specimen (No. 192) has one anterior temporal on the right side and two on the left.

* Bull U S Nat Mus

The only record of the occurrence of *Natrix stolata* in the Philippine Islands is that of Peters.[1] If Peters's specimen is extant it would be well to have it examined to determine the species as well as the presence or absence of apical pits. I strongly suspect that Peters's specimen was either *Natrix spilogaster* or *N. stolata* from an extra-Philippine locality.

NATRIX SPILOGASTER (Boie)

PLATE 4, FIG. 1

Tropidonotus spilogaster BOIE, Isis (1827) 535, (1828) 559, DUMÉRIL and BIBRON, Erp. Gen. 7 (1854) 598, GUNTHER, Cat. Col. Snakes Brit. Mus. (1858) 66, PETERS, Mon. Berl. Ak. (1861) 687, JAN, Elenco Sist. Ofid. Milan (1863) 72, Arch. Zool. Anat. Phys. 3 (1865) 225, Icon. Gen. (1868) 27, pl. 2, fig. 1, FISCHER, Arch. f. Nat. 48 (1882) 282, Jahrb. wiss. Anst. Hamburg (1885) 80, MULLER, III. Nacht. Cat. Herp. Samml. Basel Mus. (1883) 15, BOETTGER, Ber. Senck. Nat. Ges. (1886) 109, BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 257.

Tropidonotus quinquelineatus var. SCHLEGEL, Phys. Serp. (1837) 309, EYDOUX and GERVAIS, Voy. Favorite, Zool. (1839) 69, pl. 28.

Natrix spilogaster GRIFFIN, Philip. Journ. Sci. § A. 4 (1909) 596, § D. 5 (1910) 211, § D. 6 (1911) 257, TAYLOR, Philip. Journ. Sci. § D. 12 (1917) 356.

Description of species.—(From No. 407, E. H. Taylor collection; collected at Manila, May 29, 1915, by E. H. Taylor.) (Adult female.) Rostral nearly twice as wide as high, narrowly visible from above, internasals as long as broad, broadly truncate anteriorly, as long as prefrontals; latter much broader than long, forming their longest suture with frontal, frontal a little longer than its distance from end of snout, four-fifths as wide as long, parietals longer than frontal, their greatest width nearly equaling length of frontal, 2 nasals, second highest, loreal moderately large, as high as deep, in contact with 2 preoculars, of which the superior is largest, supraocular a little longer than frontal and at least half as wide, 3 postoculars, subequal in size, temporals 2 + 2 + 3; 9 upper labials, fourth, fifth, and sixth entering eye; labials have the following order of size, seventh, eighth, sixth, ninth, fifth, fourth, third, second, first, 10 lower labials, 5 in contact with anterior chin shields, mental broadly triangular; 2 pairs of chin shields subequal in size, head rather thick, diameter of eye equal to its distance from nostril; scales in 19 rows, all strongly keeled except outer row, which is faintly or not at all keeled; ventrals, 150, anal double, subcaudals, 88.

[1] Loc. cit.

Color in life.—Above olive gray, with three dark stripes running the length of body, separated by two lighter lines, light stripes are barred with lighter transverse spots at regular intervals. Each light stripe covers the equivalent of three scale rows, the dark stripes are much wider and are spotted with dark black spots, those on median stripe being largest and most conspicuous. Outer row of scales has an indistinct row of lighter spots; two nuchal light spots, quite large, of a creamy yellow; upper lip cream, with dark spots on sutures of three anterior labials, lower rim of orbit dark, chin and lower labials light, with a spot on ninth lower labial; outer edge of ventrals grayish; ventrally flesh colored, with numerous dark spots, five or six on each ventral scale.

Measurements of Natrix spilogaster (Boie)

	mm
Total length	735
Snout to vent	535
Tail	200
Width of head	14
Length of head	23

Variation.—In the numerous specimens examined the following variations are evident. The frontal varies from one and a half to one and two-thirds times as long as broad, there are 1 or 2 preoculars, postoculars, 2, 3 or 4, temporals 2 + 2 or 2 + 3, very rarely 1 + 2 or 1 + 3. There are 5 or 6 lower labials in contact with the anterior chin shields, the ventrals vary between 147 and 155, the subcaudals vary between 80 and 91. The distinctness of the dorsal stripes varies considerably.

Remarks.—The species is common in Luzon. It has been reported from Negros and Palawan by Boulenger and from Mindanao by J. G. Fischer. Specimens in the collections examined are from Polillo, Luzon, and Camiguin (Babuyan Islands). The species feeds almost wholly on frogs. It is frequently encountered in the city of Manila.

NATRIX CHRYSARGA (Schlegel)

PLATE 4, FIG. 5

Tropidonotus chrysargus SCHLEGEL, Phys. Serp. 2 (1837) 312, GUNTHER, Cat. Col. Snakes (1858) 70, FISCHER, Arch. Nat. (1885) 57, pl. 4, fig. 2, BOULENGER, Fauna Brit. India, Rept. (1890) 345, Cat. Snakes Brit. Mus. 1 (1893) 258.

Tropidonotus junceus CANTOR, Cat. Mal. Rept. (1847) 98, BLYTH, Journ. As. Soc. Bengal 24 (1855) 716, GUNTHER, Rept. Brit. India (1864) 268, pl. 22, fig. F.

Natrix chrysarga STEJNEGER, Bull. U. S. Nat. Mus. 58 (1907) 265; GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 257.

Description of species —(From No. 163, Bureau of Science collection, collected at Iwahig, Palawan, by C. M Weber) Head rather elongate, distinct from neck, rostral much broader than high, visible from above; internasals longer than wide, about as long as prefrontals, the suture between them nearly equal to that between prefrontals; frontal about one and two-third times as long as broad, shorter than supraoculars, as long as its distance to end of snout, much shorter than parietals, latter much longer than broad, in contact with 1 postocular and 2 (3 on left side) temporals; nasal large, divided or nearly so, loreal about as deep as long; 1 preocular, higher than wide; eye large, 3 postoculars, 9 upper labials, fourth, fifth, and sixth entering eye, seventh and eighth largest, mental much broader than deep, 11 lower labials (the first anterior on left side broken); first pair of chin shields shorter and broader than second pair, touching first 6 labials; second pair of chin shields touching labials entire length; scales strongly keeled, in 19 rows, outer row largest, ventrals, 152; anal divided, subcaudals, 69

Color —Above grayish brown, the skin between the scales rather reddish brown, a lateral row of small brownish yellow spots from head to tail; labials with yellowish spots; chin and belly immaculate, outer edges of ventrals grayish

Measurements of Natrix chrysarga (Schlegel)

	mm.
Total length	825
Snout to vent	625
Tail	200
Width of head	18
Length of head	30

Variation —Not a great deal of variation obtains in the specimens examined The counts of ventral scales vary within the limits of 150 and 160, of subcaudals, between 80 and 90 Boulenger gives 143 to 175 for the ventral range, 60 to 93 for the subcaudal range

The young are very distinctly marked The head is dark grayish brown, with two black-edged, white, parietal spots, there is a yellow bar on the side of the head in front of the eye, edged anteriorly with black, the labials entering the eye are yellow, edged with black, a vertical bar is present immediately behind the eye, the neck is blackish with a broad V-shaped, yellow mark crossing it from the angles of the mouth. The body is gray-brown, the five median scale rows are slightly darker than the adjoining rows, and are traversed by numerous, regular black

bars. Opposite these black bars, on the three adjoining scale rows, are small, yellowish white spots, below which on the outer scale rows is another series of black bars or spots, the ventrals have an indistinct row of dots on the outer sides, distinctly-marked on the tail.

Remarks.—This species is as common in the Calamianes and Palawan as *Natrix spilogaster* is in Luzon. It is found in low moist situations and along small streams. It feeds on frogs and fishes. It is not regarded as poisonous by the people of Busuanga. It occurs from the eastern Himalayas through Assam, Burma, southern China and the Malay Peninsula, to Java, Sumatra, Borneo, and Palawan.

NATRIX AURICULATA (Gunther)

PLATE 4, FIGS. 2 TO 4.

Tropidonotus auriculatus GUNTHER, Cat. Col. Snakes (1858) 80, PETERS, Mon. Berl. Ak. (1861) 687, BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 261, pl. 17, fig. 1, F. MULLER, Ill. Nacht. Cat. Herp. Samml. Basel Mus. (1883) 15, FISCHER, Jahrb. wiss. Anst. Hamburg 2 (1885) 80, BOETTGER, Ber. Senck. Nat. Ges. (1886) 108.

Natrix auriculata GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 257.

Description of species.—(From No. 50, E. H. Taylor collection, collected at Bunawan, Agusan, Mindanao, September 23, 1913, by E. H. Taylor.) (Adult female.) Head very short and blunt, very distinct from neck, rostral broader than deep, visible only as a narrow line from above, internasals longer than broad, narrowed anteriorly; prefrontals much broader than long, shorter than internasals, frontal about one and a half times as long as broad, longer than its distance from end of snout; parietals longer than frontal, in contact with 1 superior postocular, 2 nasals, the posterior highest; loreal higher than wide, in contact with second and third labials, preocular single, very high, not in contact with frontal; supraocular twice as long as wide, 3 postoculars; temporals $\frac{2}{1}+3$, 8 upper labials, third, fourth, and fifth entering eye, seventh, sixth, eighth, fifth, fourth, third, second, first is the order of size of labials, 9 lower labials, 5 touching anterior chin shields, which are shorter and broader than posterior, scales in 17 rows, strongly keeled, except outer row, which

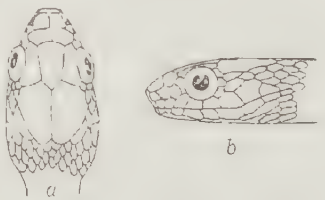


FIG. 7. *Natrix auriculata* (Gunther), after Boulenger. *a*, head, dorsal view; *b*, head, lateral view.

is only faintly keeled, ventrals, 157; anal double; subcaudals, 72, eye large, body very slender.

Color in life.—Above a dark olivaceous gray, with a lighter, median, ashy gray stripe, terminating in a spot of the same color immediately behind the parietal shields, on each side of this line is a series of dim, elongate, dark spots, immediately below which is a series of light, ashy gray spots, followed by another dim series of dark spots below. The markings are not especially distinct; on the outer edge of the ventrals and extending on the first row of scales is a milky white line which widens behind the angle of the jaw; head dark in the parietal region, and somewhat lighter on the snout; throat, lips, and temporal region dull whitish, with small dark spots on the labial sutures and a distinct black spot on the sixth labial; three dark stripes on the belly, the two outer joining the dark parietal area, crossing the angle of the jaw, the median ventral black stripe begins on the twentieth ventral, and continues to the tail, these three lines of black are separated by two white lines formed by continuous series of triangular white spots; only two black stripes under the tail, separated by a single light stripe.

Measurements of Natrix auriculata (Günther)

	mm
Total length	524
Tail	145
Width of head	10
Length of head	14

Variation.—The known range of ventrals and subcaudals is 150 to 158 and 75 to 91, respectively. There is some variation in the arrangement of the temporals. They usually assume the relation of $\frac{2}{1}+3$; the females have a larger average of ventrals and a smaller average of subcaudals than the males. The type is a female having 2 preoculars, 2 postoculars, 152 ventrals, and 76 subcaudals.

Remarks.—This species is evidently restricted to the southern Philippines. It is known from Samar, and from eastern and southern Mindanao. All the specimens here recorded are from Agusan River Valley, where it seems to be quite common. It is the smallest species of *Natrix* inhabiting our territory.

The specimens in my collection were all taken in the immediate vicinity of water, usually under leaves or logs at the edge of a small swamp. The species is very well differentiated from all the other Philippine species of *Natrix* by its small size, its large, blunt head, and the markings on the belly.

TABLE 12.—*Measurements and scale counts of Natrix auriculata (Gunther)*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals
				mm	mm	
46	Bunawan Agusan	E H Taylor	yg	216	68	162
47	do	do	yg	201	87	160
48	do	do	♀	455	100	157
49	do	do	yg	257	70	161
[a]50	do	do	♀	524	145	157
51	do	do	yg	183	55	168
52	do	do	♂	341	100	154
1725	do	do	♂	(b)	(b)	
955	Agusan River Mindanao	J Merrill	yg	140	39	152
956	do	do	yg	180	50	150
[c]a	Philippines	H Cuming	♀			152

No	Subcaudals	Anals	Labials enter eye	Upper labials	Lower labials	Preoculars	Postoculars	Scale rows	Collection
46	88	2	3,4 5	8	9	1	3	17	E H Taylor
47	84	2	3,4 5	8	9	1	3	17	Do
48	(b)	2	3 4 5	8	9	1	3	17	Do
49	82	2	3 4 5	8	9	1	3	17	Do
[a]50	75	2	3,4,5	8	9	1	3	17	Do
51	88	2	3 4 5	8	9	1	3	17	Do
52	87	2	3 4 5	8	9	1	3	17	Do
1726		2	3 4,5	8	9	1	3	17	Bureau of Science
955	82	2	3,4,5	8	9	1	3	17	Do
956	84	2	3,4,5	8	9	1	3	17	Do
[c]a	76	2	3,4,5	8	--	2	2	17	British Museum

[a] Described [b] Mutilated [c] Type

NATRIX CREBRIPUNCTATA (Wiegmann)

Tropidonotus crebripunctatus WIEGMANN, Nova Acta Ac Leop-Carol 17 ' (1835) 250, BOULENGER, Cat Snakes Brit Mus 1 (1893) 262
Natrix crebripunctata GRIFFIN, Philip Journ Sci § D 6 (1911) 257

Description of species.—(From Boulenger.) "Head short, very distinct from neck. Eye very large Rostral broader than deep, just visible from above, internasals as long as broad, as long as the præfrontals, frontal once and three fifths as long as broad, longer than its distance from the end of the snout, as long as the parietals; loreal as long as deep; two præ- and three postoculars, temporals 2 + 3, eight to ten upper labials, (the specimen in the collection has eight on one side, ten on the other), fourth and fifth, fifth or sixth, or sixth and seventh entering the eye, four lower labials in contact with the anterior

chin-shields, which are shorter than the posterior Scales in 19 rows, all strongly keeled Ventrals 148–166, anal divided, subcaudals 96–101

Color—"Olive above, vertebral line lighter and crossed by narrow black bars; upper lip yellowish, the shields black-edged above; belly whitish, with a black dot at the outer end of each shield, posterior ventrals brown on the sides, subcaudals entirely brown"

Measurements of Natrix crebripunctata (Wiegmann)

	mm
Total length	680
Tail	230

Remarks—I have been unable to find this species, and there are no specimens in the collections which I have studied. There is a single specimen in the British Museum collection from the Philippines collected by Cuming Boettger has placed this species as a synonym of *Natrix spilogaster* (Boie)

NATRIX LINEATA (Peters)

PLATE 4, FIGS 6 AND 7, PLATE 5

Tropidonotus lineatus PETERS, Mon Berl Ak (1861) 686, BOULENGER, Cat Snakes Brit Mus 1 (1893) 262, BOETTGER, Ber Senck Nat Ges (1886) 109

Natrix lineata GRIFFIN, Philip Journ Sci § D 6 (1911) 257

Description of species—(From No R 34, E H. Taylor collection; collected at Bunawan, Agusan, Mindanao, March 15, 1913, by E. H Taylor) (Adult male) Rostral much wider than high, not visible from above, internasals a little longer than wide, bent downward in front to meet rostral, their sutures with surrounding scales subequal, prefrontal a little broader than long, nearly three times the size of internasals, forming its shortest suture with supraocular, its longest suture with its fellow; frontal one-fifth longer than wide, longer than its distance from end of snout, nearly equal in length to width of parietal; parietals large, in contact with 2 postoculars, longer than frontal, but shorter than their distance from end of snout, nasal divided, posterior portion highest; loreal squarish, little more than half as high as posterior nasal; 2 pre-

* I strongly suspect that *N crebripunctata* Wiegmann is indeed *N spilogaster* I believe further that Boulenger's species of this name is a distinct species

oculars (1 on left side), both in contact with loreal, supraocular as long as frontal, about half as wide, 3 postoculars, temporals 1 + 2; upper labials 8 (9 on right side), third, fourth, and fifth (fourth, fifth, and sixth on left side) entering eye; seventh, sixth, and fifth largest in the order named, 9 lower labials, 4 in contact with first pair of chin shields (5 in all the other specimens), 2 pairs of chin shields, second longest and narrowest; scales in 19 rows, keeled strongly, except outer row, which is less strongly keeled than the others, ventrals, rounded, 138, anal double, subcaudals, 71, eye moderate, its diameter not equal to its distance from nostril; head narrowed in front, and noticeably broadened in temporal region

Color in life.—Above bluish black, head dark brown with a milk-white stripe from rostral across upper part of labials, continuing backward and downward to where it reaches eighth ventral scale; lower part of upper labials dark, lower labials spotted with dark, chin shields immaculate creamy yellow; belly same color, with a zigzag subcaudal line to end of tail

Measurements of Natrix lineata (Peters)

	mm
Total length	625
Tail	159

Variation.—Table 13 shows the scale counts on a series of specimens collected in the same locality as the type. The variation in the ventral count is from 132 to 142, in the subcaudal count, 64 to 71. The most variable elements are the upper labials and the preoculars, there is a tendency for the third labial to split and in consequence the number of labials entering the orbit varies; 8 is the predominant number of upper labials, 2 is the predominant number of the preoculars.

Markings on the back are evident in the younger specimens. In No. 32 (E. H. Taylor collection) the head is a distinct brown with a broad semicircular dark area on the occipital region followed by a milk-white collar which joins the two labial lines; behind this is a transverse dark olive band, then another lighter olive band, broader than the former, and still another narrow black band, and a second light olive band, after which the dark color breaks up into a network, the limits of the meshes being marked with a larger dark spot. The ground color is light olive brown, this specimen shows a powdering of brown on each ventral, with the subcaudal region very dark.

TABLE 13.—*Measurements and scale counts of Natrix lineata (Peters)*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals	Subcaudals
				mm	mm		
29	Bunawan Agusan	E H Taylor	♂	495	194	182	69
30	do	do	♀	574	(a)	137	(a)
31	do	do	♂	525	195	136	66
32	do	do	yg	525	58	135	65
33	do	do	yg	391	96	136	64
34	do	do	♂	624	159	138	71
35	do	do	♀	460	(a)	128	(a)
36	do	do	♂	592	140	136	65
1714	do	do	♀				
1715	do	do	♀				
1716	do	do	♂				
1717	do	do	♂				
1743	do	do	yg				
(b)	Samar	F Jagor		600	160	142	66

No	Anals	Preoculars	Postoculars	Upper labials	Lower labials	Labials entering eye	Temporals	Labials touching first chinshields	Scale rows	Collection
29	2	2-1	3	8	10	3 4 5	1+2	5	19	E H Taylor
30	2	2	3	8	10	4, 5 / 3, 4, 5	1+2	5	19	Do
31	2	2	3	8	10	3 4 5	1+2	5	19	Do
32	2	2	3	8	10	3 4 5	1+2	5	19	Do
33	2	1	3	8-9	10	3, 4, 5 / 4 5 6	1+3	5	19	Do
34	2	1	3	9-8	9	3 4 5 / 4 5 6	1+2	4	19	Do
35	2	2	3	9	10	4 5 6	1+2	5	19	Do
36	2	1-2	3	9	10	4 5 6	1+2	5	19	Do
1714	2	2	3	8-9	10	4, 5	1+2	5	19	Do
1715	2	2	3	8	9-10	3, 4, 5	1+2	4	19	Do
1716	2	2	3	9	10	4 5, 6	1+2	5	19	Do
1717	2	2	3	9	9	4 5 6	1+2	5	19	Do
1743	2	2	3	8	9	3 4 5	1+2	5	19	Do
(b)	2	2	3	8		4 5 / 3 4 5	1+2	---	19	Berlin Museum

[1] Mutilated [2] Type

Remarks.—This species, according to Boulenger, is closely allied to *Natrix crebripunctata* (Wiegmann). There is however, but a single anterior temporal in *N. lineata*, which character is constant in the series of thirteen specimens. There is a very much lower average of ventrals and subcaudals. The markings, too, would seem to distinguish it. There are no vertebral lines

* Cat. Snakes Brit. Mus. 1 (1893) 262

apparent on the body, even in the young The widening of the head in the temporal region is very characteristic, especially in older specimens A female contained five undeveloped eggs All the specimens were found in damp situations, usually under leaves and trash along the edge of a small swamp It is common at Bunawan

NATRIX DENDROPHIOPS Gunther

This species appears to have two distinct forms in the Philippines, the typical form from Mindanao, and the second, from Negros They are distinguished as follows

Key to the subspecies of Natrix dendrophiops Gunther

a^1 Scales in 17 rows.	N d dendrophiops (Gunther) (p 95)
a^2 Scales in 19 rows	N d negrosensis Taylor (p 97)

NATRIX DENDROPHIOPS DENDROPHIOPS (Gunther)

Tropidonotus dendrophiops GUNTHER, Ann & Mag Nat Hist V 11 (1883) 136, fig , BOULENGER, Cat Snakes Brit Mus 1 (1893) 264, BOETTGER, Ber Senck Nat Ges (1886) 109

?*Tropidonotus hypomelas* MULLER, Verh Nat Ges Basel 1883) 286, III Nacht Cat Herp Samml Basel Mus (1883) 15

Natrix dendrophiops GRIFFIN, Philip Journ Sci § D 6 (1911) 257

Description of species.—(From No 60, E H. Taylor collection; collected at Bunawan, Agusan, Mindanao, September 15, 1913, by E H Taylor) (Adult male) Rostral large, twice as wide as high, forming its longest suture with nasal, only slightly visible from above; internasals longer than broad, the suture between them equal to prefrontal suture; prefrontals very wide, bending down on sides at a rather sharp angle; frontal longer than its distance from end of snout, not as long as parietals or supraoculars, and not twice as wide as supraoculars, the anterior edge forming nearly a straight line, parietals moderate, longer than broad, in contact with upper postocular and 1 or 2 temporals; scales bordering parietals behind numerous, small, nostrils pierced between 2 nasals, the posterior larger and higher, prefrontals appear to enter nostrils above, loreal not as high as nasals, in contact with both preoculars, its upper edge curving, 2 preoculars, lower in contact with 2 labials, upper separated from frontal; 3 postoculars, upper largest; temporals $\frac{2}{1} + 3$, 9 upper labials, 8 on left side where seventh and eighth are fused into a single scale, fourth, fifth, and sixth enter eye, labials arranged in the following order of size: seventh, ninth, eighth, sixth, fourth, fifth, third, second, first: 10 lower labials, 5 touching chin shields: mental broadly triangular;

second pair of chin shields longer and narrower than first pair, separated throughout their length; scales in 17 rows, all strongly keeled, median rows very small, outer large; ventrals, 154, rounded, anal double, subcaudals divided, 98; eye very large, its diameter nearly equal to its distance from end of snout; body rather slender; tail very slender

Color in life.—Olivaceous above, tinged more or less with pinkish, with three rows of blackish irregular spots, one median dorsal, the other two lateral, these are separated by two rows of pinkish yellow, black-edged spots, continuing full length of body, the black and yellow spots form an irregular transverse row, neck is banded with dark blackish and lighter olivaceous bands, head above brownish gray, lighter on snout, sides of snout brownish yellow, upper labials yellowish with a few spots anteriorly; lower rim of orbit dark, a short black line behind eye, lower labials cream yellow, with spots on edge of sixth, the lateral dark spots extend to ventrals, there are one or two rows of black, elongate spots on ventrals, but these do not form continuous lines, the anterior part of each ventral with numerous small flecks of black, under the last half of belly there is a more or less continuous median dark line to anus; subcaudally almost black, scales narrowly edged with lighter

Measurements of Natrix dendrophiops dendrophiops (Gunther)

	mm
Total length	796
Tail	240
Width of head	18
Length of head	24

Variation.—The ventrals and subcaudals vary between 154 and 157 and 94 and 100, respectively, the postoculars, between 2 and 3, the larger percentage having 3 No 58 (E H Taylor collection) has a single prefrontal on one side only In the young specimens the markings are more clearly defined There are a broad blackish bar on the neck and one or two other broad bands behind this The markings resolve themselves into a large series of narrow, transverse, blackish bands, interrupted laterally by white dots The type measures 900 millimeters in length and is much larger than any specimen that I have examined

Remarks.—This snake feeds on frogs and is usually found not far from water Five of the six specimens I collected were taken under logs Known only from Zamboanga, southwestern Mindanao, and Bunawan in the upper Agusan Valley.

TABLE 14.—*Measurements and scale counts of Natrix dendrophiops dendrophiops (Günther)*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals
				mm	mm	
56	Bunawan Agusan	E H Taylor	♂	661	(a)	155
57	do	do	yg	319	90	154
58	do	do	yg	860	(a)	156
59	do	do	♂	628	150	155
b60	do	do	♂	796	240	154
1713	do	do	♀	(a)	(a)	
c a	Zamboanga	H M S *Challenger*	♀	900	270	157

No	Subcaudals	Anals	Preoculars	Postoculars	Upper labials	Lower labials	Labials enter eye	Scale rows	Collection
56	(a)	2	2	3	9	9	4,5,6	17	E H Taylor
57	94	2	2	2	9	10	4 5,6	17	Do
58	(a)	2	1-2	2	10-8	10	4 5,6	17	Do
59	(a)	2	2	3	9	10	4,5,b	17	Do
b60	98	2	2	3	9-8	10	4 5 b	17	Do
1713	d	2	2	3	9	10	4 5 b	17	Bureau of Science
c a	100	2	1-2	3			4 5 6	17	British Museum

[a] Mutilated [b] Described [c] Type

NATRIX DENDROPHIOPS NEGROSENSIS Taylor

Natrix dendrophiops negrosensis TAYLOR, Philip Journ Sci § D 12 (1917) 356

Description of species.—(From the type, No. 128, E. H. Taylor collection, collected on Canlaon Volcano, Occidental Negros, by E. H. Taylor.) Rostral fairly large, nearly twice as wide as high upper edge curved and distinctly visible from above, its sutures with nasals little longer than those with internasals, the latter longer than broad, the suture between them equal to their sutures with prefrontals, which are less than the suture with nasals, prefrontals much broader than long, narrowed on sides, forming coequal sutures with internasal and frontal, their shortest suture with supraocular; frontal longer than broad, wider, but not as long as supraoculars, somewhat shield-shaped, longer than its distance from end of snout, shorter than parietals, the latter longer than broad, bordered laterally by 2 elongate temporals, in contact with only 1 postocular; nostril between 2 nasals, which

differ greatly in shape but are of nearly equal size, loreal nearly square, touching second and third labials, 1 elongate preocular, twice as high as wide, and wider at top than at bottom, semidivided, 3 small postoculars (4 on right side), temporals 2 + 3; fourth, fifth, and sixth labials entering eye, mental broadly triangular; 10 lower labials, sixth and seventh largest, first 5 in contact with first chin shield, which is noticeably shorter than second; 19 rows of scales, the outer largest, faintly keeled, all the others strongly keeled; scales with 2 apical pits easily discernible; anal divided; ventrals, 164, subcaudals, 97; eye very large

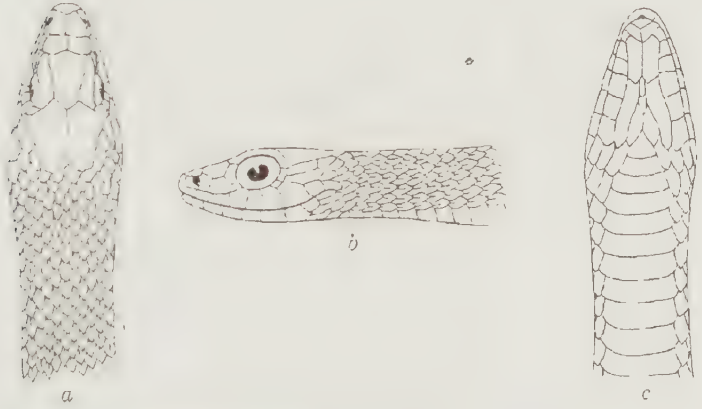


FIG. 8. *Natrix dendrophiops nigrocauda* Taylor. *a*, head dorsal view; *b*, head lateral view; *c*, head ventral view.

Color in life.—Reddish brown to olive, with a median series of dark, more or less distinct spots or bars at intervals of 0.5 centimeter, on sides and forming continuations of the dark dorsal bars is a series of dark spots. Below pinkish white with a series of small, more or less regular black spots on each ventral and subcaudal, bars on neck very much wider than elsewhere; top of head brownish olive, labials brownish white with dark areas between first three, a distinct black line runs from behind eye to posterior part of eighth supralabial, where it turns and continues downward to first ventrals, scales on head minutely edged with black.

Measurements of the type of Natrix dendrophiops negrosensis Taylor

	mm
Length	730
Snout to vent	526
Vent to tip of tail	204
Width of head	11
Length of head	20
Diameter of eye	5

Variation.—The postoculars show a tendency to increase to four; one specimen has the third, fourth, and fifth labials entering the eye, and a second specimen shows four labials entering on the right side

Remarks.—The following characteristics seem to warrant the separation of this subspecies from typical *Natrix dendrophiops* There is a tendency to an increase in the number of postoculars from 3 to 4, there is only a single preocular (specimens of *N dendrophiops* from northern Mindanao have 2 distinct preoculars), there is an average of 10 more ventrals; there are constantly 19 instead of 17 rows of scales; the eye is somewhat smaller; and the loreal is lower.

Genus OXYRHABDIUM Boulenger

Stenognathus (non Chaud.) Duméril and Bibron, Erp Gén 7 (1854) 503, Jan, Arch Zool Anat Phys 2 (1862) 28
Rhabdosoma, part, Gunther, Cat Col Snakes Brit Mus (1858) 10
Geophis, part, Boettger, Ber Senck Nat Ges (1886) 106, Casto de Elera, Cat Fauna Filipinas 1 (1895) 425
Oxyrhabdium Boulenger, Cat Snakes Brit Mus 1 (1893) 302, Griffin, Philip Journ Sci § D 6 (1911) 258

"Maxillary teeth 30 to 35, small, equal; mandibular teeth equal. Head not distinct from neck, eye small, with vertically subelliptic pupil, nostril pierced between two small nasals, a pair of small internasals, no præocular; loreal and præfrontal entering the eye Body cylindrical; scales smooth in 15 rows, without apical pits: ventrals rounded Tail moderate, subcaudals in two rows Hypapophyses developed throughout the vertebral column" (*Boulenger.*)

Key to the species of Oxyrhabdium Boulenger

a^1 Eight upper labials, fifth and sixth entering eye, reddish brown above, yellowish below Young with yellow collar
O modestum (Duméril and Bibron) (p 100)

a^2 Seven upper labials fourth and fifth entering eye, olive green to darker Young black with dim yellowish rings on body
O leporinum (Guntheı) (p 103)

The genus is confined to the Philippines The record of Duméril and Bibron for Java is doubtless an error [1] The first species appears to be confined to the southern part of Luzon, Samar, and Mindanao, the second, to northern and central Luzon

OXYRHABDIUM MODESTUM (Duméril and Bibron)

Stenognathus modestus DUMÉRIL and BIBRON, Erp Gén 7 (1854) 504; PETERS, Mon Berl Ak (1861) 684, JAN, Arch Zool Anat Phys 2 (1862) 28, Icon Gén (1865) 13, pl 1, fig 3

Rhabdosoma leporinum, part, GUNTHER, Cat Col Snakes Brit Mus (1858) 12, F MULLER, III Nacht Cat Herp Samml Basel Mus (1883) 12

Stenognathus modestus, part, GUNTHER, Proc Zool Soc London (1873) 169

Rhabdosoma modestum, part, GUNTHER, Proc Zool Soc London (1879) 77

Geophis schadenbergi FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 93, pl 3, fig 4, BOETTGER, Ber Senck Nat Ges (1886) 106

Geophis modestus, part, BOETTGER, Ber Senck Nat Ges (1886) 106

Oxyrhabdium modestum BOULENGER, Cat Snakes Brit Mus 1 (1893) 302, GRIFFIN Philip Journ Sci § D 6 (1911) 258

Description of species —(From No 3, E H Taylor collection, collected at Bunawan, Agusan, Mindanao, August 12, 1913, by E H. Taylor.) (Adult female) Rostral small, higher than

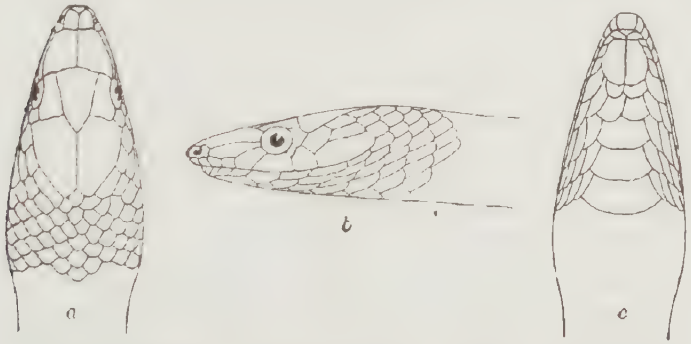


FIG 9 *Oxyrhabdium modestum* (Duméril and Bibron) drawing of a Mindanao specimen *a*, head dorsal view, *b* head lateral view, *c* head ventral view X 2

wide, scarcely visible from above; internasals small, the suture between them less than one-third of that between prefrontals, latter very large, equaling or nearly equaling frontal, four or five times the size of internasals, broadly entering eye; frontal nearly twice as long as wide, not twice the width of supra-

[1] Gunther, Proc Zool Soc London (1873) 169

oculars, parietals longer than frontal, and twice as long as wide; nostril large, pierced between 2 nasals; loreal three times as long as wide, narrowly entering eye, in contact with 3 labials; no preocular, 2 postoculars; temporals 1 + 2 + 3; 8 upper labials, fifth and sixth entering eye; labials in the following order of size. eighth, sixth, seventh, fifth, fourth, third, second, first; mental narrow, subcrescentic; 6 lower labials, fourth largest, the first 4 in contact with anterior chin shields, which are very broad and closely juxtaposed and followed by 2 small pairs of imbricate scales; mental groove very indistinct, eye small, the diameter less than half the distance from nostril, the pupil appearing nearly round, head somewhat flattened, more or less distinct from neck; snout acuminate, ventrals, 177; anal single; subcaudals, 56; scales in 15 smooth rows, outer largest, all without apical pits; tail cylindrical

Color in life.—Above dark iridescent lavender-brown, becoming lighter on sides; belly immaculate creamy yellow; top of head darker, bluish brown to lavender, labials cream color to yellow; under part of tail a muddy cream, with an indistinct zigzag line between subcaudals, edges of body scales darker, giving the appearance of an indistinct network over body

Measurements of Oxyrhabdium modestum (Duméril and Bibron)

	mm
Total length	579
Snout to vent	480
Tail	99

Variation.—It will be seen from Table 15 that males have a smaller number of ventrals and a larger number of subcaudals than females; No. 1 of those listed, although having the average number of ventrals and subcaudals, has only 7 upper labials, with the fourth and fifth entering the eye, in this it agrees with *Oxyrhabdium leporinum*. It has a single postocular, but in all other respects agrees with the other specimens, and in no way resembles *O. leporinum* in color or markings. There is a tendency toward the fusion of the postoculars, and in five specimens they are fused on one or both sides. The young have a yellow collar but no other distinctive markings. I have examined one specimen (No. R 575) from Camp Gandara, Samar, which has the following scale formula: Scale rows, 15; ventrals, 164; anal single; subcaudals, 49, length, 410 millimeters. No. 915 has the anal divided, but otherwise agrees with normal specimens. A single unnumbered specimen in the Santo Tomás Museum, an adult female containing eggs, is the largest one

that was examined, and shows certain variation Its measurements are. Total length, 602 millimeters, tail, 102 The ventrals number 170, the subcaudals, 54 The loreal fails slightly to enter the eye and is in contact with 4 labials; the internasals are greatly reduced No locality is given

TABLE 15.—*Measurements and scale counts of Oxyrhabdium modestum (Dumeril and Bibron).*

No	Locality	Collector	Sex	Length	Tail
				mm	mm
1	Bunawan Agusan	E H Taylor	♀	495	88
2	do	do	♀	465	83
3	do	do	♀	579	99
4	do	do	♀	473	86
5	do	do	♀	347	60
6	do	do	♀	472	70
7	do	do	♂	430	88
8	do	do	♂	598	113
9	do	do	♀	477	84
10	do	do	♀	445	81
11	do	do	♂	185	40
12	do	do	♀	479	84
13	do	do	♂	320	60
14	do	do	♂	380	71
15	do	do	♀	484	85
16	do	do	♀	445	84
17	do	do	♂	383	83
R 575	Camp Gandara Samar.	Capt Correll	♀	410	67
R 916	Agusan, Mindanao	E H Taylor	♀	430	85

No	Ventrals	Subcaudals	Labials	Postoculars	Scale rows	Labials enter eye	Collection
1	176	57	7	2	15	4 5	L H Taylor
2	172	55	8	2-1	16	5 6	Do
3	177	56	8	2	15	5 6	Do
4	166	66	8	1-2	15	5 6	Do
5	176	58	8	2	15	5,6	Do
6	179	53	7-8	2-1	16	4 5,5,6	Do
7	169	60	8	2	15	5 6	Do
8	171	66	8	2	15	5 6	Do
9	173	56	8	1	15	5,6	Do
10	175	57	8	2	16	5 6	Do
11	177	63	8	2	15	5 6	Do
12	176	57	8	2	15	5 6	Do
13	162	60	8	2	15	5 6	Do
14	168	63	8	2	15	5 6	Do
15	174	53	8	2	16	5,6	Do
16	178	60	8	2	15	5 6	Do
17	169	62	8	2	15	5 6	Do
R 575	164	49	8	2	15	5 6	Bureau of Science
R 915	173	52	8	2	15	5 6	Do

Remarks.—This species has been found only in the Philippine Islands, the known localities * are Samar, Mindanao, and Dinagat It was especially common at Bunawan, more than fifty specimens were captured during my collecting there. A few were found burrowed in the roots of large tree ferns (*Asplenium nidus*) but only those in fallen trees. Usually specimens were found in the forest, under grass and leaves on the ground. These snakes are very gentle; although I have handled many living specimens, none has ever attempted to bite They readily take food in captivity The Manobos who are familiar with this snake appear to have no specific name for it. They do not regard it as poisonous

OXYRHABDIUM LEPORINUM (Gunther)

Rhabdosoma leporinum, part, GUNTHER, Cat Col Snakes Brit Mus (1858) 12

?*Stenognathus brevirostris* PETERS, Mon. Berl Ak (1872) 586

Stenognathus modestus, part, GUNTHER, Proc Zool Soc London (1873) 169.

Rhabdosoma modestum, part, GUNTHER, Proc. Zool Soc London (1879) 77

?*Geophis brevirostris* BOETTGER, Ber. Senck Nat Ges (1886) 106, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 425

Oxyrhabdium leporinum BOULENGER, Cat Snakes Brit Mus 1 (1893) 303, GRIFFIN, Philip Journ Sci § D 6 (1911) 258

Description of species.—(From No 111, E. H. Taylor collection; collected at Baguio, Benguet, Luzon, June 1, 1915, on the slopes of Mount Santo Tomás at an elevation of about 2,000 meters, by E H. Taylor) (Adult female) Head obtusely pointed, with a very small rostral, little higher than wide, barely visible from above, internasals small, the suture between them one-third to one-fourth that of prefrontals; latter large, rather narrow, five to six times the size of internasals, and nearly equal to frontal, broadly entering eye and forming its longest suture with loreal, which is a little longer than that formed between the 2 prefrontals, frontal but little longer than wide,

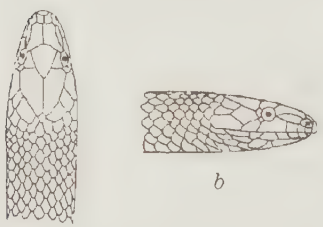


FIG 10 *Oxyrhabdium leporinum* (Gunther) after Boulenger, *a*, head, dorsal view *b* head lateral view

* Gunther lists Luzon as a known locality, but since he confused the two species it is not improbable that he referred to *O leporinum*

nearly three times as wide as supraoculars; parietals large, not twice as long as frontal; nostril between 2 nasals, the posterior largest; loreal about five times as long as wide, narrowly entering eye; supraocular narrow, elongate, 2 small postoculars, upper largest; temporals 1 + 2; 7 labials, fourth and fifth entering eye, seventh, fourth, fifth, sixth, third, second, first, is the order of size of the labials, mental very small, subcrescentic; chin shields very large, closely juxtaposed with a very indistinct mental groove; chin shields followed by 3 pairs of imbricate scales, eye dark blue, with a yellow vertical pupil, head distinct from neck, ventrals, 165, anal undivided, subcaudals, 41, scale rows, 15, all smooth

Color in life.—A bright uniform yellow-olive, iridescent above; head same color but a little darker; labials yellowish, spotted with brown, below yellow-cream, edges of ventrals tinged with grayish; dark subcaudally. In alcohol the color changes to a dull brownish black

Measurements of Oxyhabdium leporinum (Guenther)

	mm.
Total length	685
Snout to vent	592
Tail	93
Head width	12
Head length	25

Variation.—There are one adult and three young specimens in my collection from Benguet. There is one adult specimen in the Bureau of Science collection. There is but little variation evident in the species, save in the ventral and subcaudal counts, the limits in the former being 164 and 180, and in the latter, 41 and 51. The young are a slaty blue-black, with a whitish nuchal collar and a series of indistinct bands of white 1 or 2 scales wide crossing the body in a zigzag manner.

Remarks.—This species seems to be confined to the highlands of Luzon, it is a rare snake. Two specimens were dug up along an irrigation ditch, and a third had burrowed under a rock at an elevation of 2,000 meters on Mount Santo Tomas. The specimen here described was found crawling in an open forest path. This species is of a very gentle disposition. The type was collected by H. Cuming, the exact type locality is no longer known. A second specimen in the British Museum is from Luzon, collected by A. B. Meyer. The types of *Stenognathus*

brevirostris Peters, a young and an old specimen, are from "Philippines," collected by Wallis [a]

TABLE 16.—*Measurements and scale counts of Oxyrhabdium leporinum (Günther)*

No	Locality	Collector	Sex & age	Length
				mm
111	Mount Santo Tomas, Benguet	E. H. Taylor	♂	685
112	do	do	yg	272
113	Baguio	do	♂	(a)
114	do	do	yg	282
R 1710	do	do	♀	557
(a)	Philippines	H. Cuming		825
(b)	Luzon	A. B. Meyer		---
(c)	Philippines	Wallis		630

No	Tail	Ventrals	Subcaudals	Labials	Postoculars	Scale rows	Labials on eye	Collection
	mm							
111	93	165	41	7	2	15	4 & 5	E. H. Taylor
112	45	164	44	7	2	15	4, 5	Do
113	(a)	----	----	7	2	15	4, 5	Do
114	44	174	46	7	2	15	4 & 5	Do
R 1710	94	174	39	7	2	15	4, 5	Bureau of Science
(a)	105	169	43	7	----	15	4, 5	British Museum
(b)	--	180	46	7	--	15	4, 5	Do
(c)	108	176	51	7	--	15	4, 5	Berlin

[a] Badly mutilated

[b] Type counts from Boulenger, loc. cit.

[c] Type of *Stenognathus brevirostris* Peters, from Peters

Genus CYCLOCORUS Duméril and Bibron

Lycodon, part, REINHARDT, Kongl. Danske Vid. Selsk. Afhandl. 10 (1843) 241

Cyclocorus DUMÉRIL and BIBRON, Mém. Ac. Sci. 23 (1853) 460, Erp. Gén. 7 (1854) 385, GÜNTHER, Cat. Col. Snakes Brit. Mus. (1858) 208, JAN, Elenco Sist. Ofid. (1863) 95, BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 326, BOETTGER, Ber. Senck. Nat. Ges. (1886) 114

"Maxillary and dentary bones angularly bent inwards anteriorly, three or four anterior teeth, in both jaws, increasing in size, the last large and fang-like, followed after an interspace by 12 or 13 small maxillary teeth. Head slightly distinct from

[a] May represent a distinct species

neck; eye rather small, with round pupil. Body moderately elongate, cylindrical, scales smooth, with apical pits, in 17 rows, ventrals rounded. Tail moderate; subcaudals single. Hypapophyses developed throughout the vertebral column." (*Boulenger.*)

This is a Philippine genus having only a single known species, *Cyclocorus lineatus* (Reinhardt). This species is rather inconspicuous, it attains a length of about half a meter

CYCLOCORUS LINEATUS (Reinhardt)

Lycodon lineatus REINHARDT, Kongl Danske Vid Selsk Afhandl 10 (1843) 241, pl 1, figs 7–9

Cyclocorus lineatus DUMÉRIL and BIBRON, Erp Gén 7 (1854) 386, GUNTHER, Cat Col Snakes Brit Mus (1858) 208, PETERS, Mon Berl Ak (1861) 688, JAN, Icon Gén (1870) part 36, pl 6, fig 2, MULLER, III Nacht Cat Herp Samml Basel Mus (1883) 17, BOETTGER, Ber Senck Nat Ges (1886) 114, BOULENGER, Cat Snakes Brit Mus 1 (1893) 327, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 438, GRIFFIN, Philip Journ Sci § D 5 (1910) 211, § D 6 (1911) 258, TAYLOR, Philip Journ Sci § D 12 (1917) 359, § D 13 (1918) 260

Description of species.—(From No 144, E H Taylor collection, collected on Canlaon Volcano, Occidental Negros, December 27, 1914, elevation about 900 meters, by E. H Taylor.) (Adult male.) Rostral twice as wide as high, slightly visible from above; internasals small, less than half as large as prefrontals, more or less rectangular in shape; prefrontal forming its largest sutures with frontal, supraocular and loreal sutures smallest, frontal chevron-shaped, more than twice as long as wide, longer than its distance from end of snout, parietals large, not as long as frontal and prefrontals together, but longer than the former; supraocular not twice as long as wide; nostril between 2 nasals, anterior largest and nearly surrounding nostril; posterior nasal moderate, with a depression on its surface; loreal small, pentagonal, forming its longest suture with second labial; 2 preoculars, superior more than twice as large as inferior, 2 subequal postoculars, temporals 2 + 2 + 2, third superior being much the largest; 8 upper labials, third to fifth entering eye, seventh, eighth, fifth, and sixth largest, in the order named, 8 lower labials, fourth largest, last 2 small, mental an equilateral triangle, 4 labials in contact with anterior chin shields, which are nearly equal in length to posterior pair; latter pair separated from ventrals by 2 rows of small scales; ventrals, 146; anal single; subcaudals, 52; scales in 17 rows, all smooth with apical pits

Color in life.—Bluish brown above with three darker lines beginning near the head and continuing to end of tail, these are scarcely visible anteriorly, each line incloses a series of small, dim, whitish yellow dots; ventrals with a heavy brownish line, extending the length of body; a small whitish dot on end of each ventral, but not continuing on subcaudals, scattered triangular black spots on ventrals, head markings more or less indistinct, regular; labials lighter with a dull stripe below eye, the lighter part edged with darker, chin and throat dark with cream yellow spots, lower labials with distinct yellow spots

Measurements of Cyclocorus lineatus (Reinhardt)

	mm
Total length	440
Snout to vent	341
Tail	99
Width of head	13
Length of head	21

Variation.—There is much variation in certain scale elements in this species and it appears to be associated with geographical distribution The Mindanao forms vary uniformly in scale count from Negros or Luzon specimens, and might be regarded as worthy of subspecific rank Specimens from Samar and Leyte or southern Luzon would probably connect the various forms Table 17 shows the differences that exist between the southern and the northern groups There is a marked difference between the tail length of the Mindanao and the tail length of the northern specimens, especially in the males, the average being about 16 millimeters The Mindanao specimens average

TABLE 17.—*Average measurements and scale counts of Cyclocorus lineatus (Reinhardt)*

Locality	Number and sex	Average			
		Length	Tail	Ventrals	Subcaudals
		mm	mm		
Mindanao	12 males of nearly equal size	440	121		
Various northern localities	14 males of nearly equal size	498	105		
Mindanao	8 females of nearly equal size	460	91		
Various northern localities	6 females of nearly equal size	480	98		
Mindanao	18 males			130	54
Do	13 females			142	47
Various northern localities	16 males			145	52
Do	18 females			150	44

15 ventrals less for the males, and 8 ventrals less for the females, while the number of subcaudals in the Mindanao forms is higher in both cases. The range of ventrals for the species is 128 to 157, of subcaudals, 37 to 59. The temporal scales in the Mindanao specimens are normally 1 + 2. Of thirty-one specimens examined twenty-four had the normal arrangement; five had the number on one side only, and two had 2 + 2, which is the normal formula in the northern specimens. The loreal in northern forms is constantly larger, as is the superior preocular which extends well above the loreal, the number of lower labials touching the anterior chin shields averages one less in Mindanao specimens. The same variations of color are found in both groups.

The color in young specimens varies considerably from that in the adult. The median dark stripe is distinct, going forward to between the eyes where the interorbital bar intersects it, another bar of dark brown crosses it in the occipital region; on

TABLE 18.—*Measurements and scale counts of Cyclocorus lineatus (Reinhardt)*

No.	Locality	Collector	Sex	Length	Tail
				mm.	mm.
70	Bunawan, Agusan	E. H. Taylor	♂	375	105
71	do	do	♂	419	123
72	do	do		423	102
73	do	do	♀	277	58
74	do	do	♀	384	79
75	do	do		427	117
76	do	do	♂	368	(a)
77	do	do	♀	385	88
143	Canlaon Volcano, Negros	do		433	101
144	do	do		440	99
145	do	do	♀	368	82
147	do	do	♀	363	60
148	do	do	♀	425	70
151	do	do		396	90
153	do	do	♂	427	96
155	do	do	♀	338	74
158	do	do	♀	385	79
159	do	do	♀	372	79
810	Pohlo	C. Canonizado	♀	525	101
809	do	do	♀	440	85
1483	Puerto Galera, Mindoro	Marine Biological Expedition	♀	471	93
328	Sumagui, Mindoro	Clark Burks		360	(a)
324	do	do		120	114
325	do	do		165	112

[a] Mutilated.

TABLE 18.—*Measurements and scale counts of Cyclocorus lineatus (Reinhardt)*—Continued

No.	Ventrals	Subcaudals	Anals	Preoculars	Postoculars	Upper labials	Labials enter eye	Labials touch chin shields	Scale rows	Temporals	Collection
70	132	58	1	2	2	8	3 4 5	4	17	2+2	E. H. Taylor
71	128	57	1	2	2	8	3,4,5	3	17	1+2	Do.
72	131	46	1	2	2	8	3,4,5	4	17	1+2	Do.
73	130	47	1	2	2	8	3,4,5	3	17	1+2	Do.
74	139	45	1	2	2	8	3,4,5	3	17	1+2	Do.
75	129	56	1	2	2	8	3,4,5	3	17	1+2	Do.
76	130	(a)	1	2	2	8	3,4,5	3	17	1+2	Do.
77	147	48	1	2	2	8	3,4,5	4	17	2+2	Do.
143	146	51	1	2	2	8	3 4 5	4	17	2+2	Do.
144	146	52	1	2	2	8	3,4,5	4	17	2+2	Do.
145	143	43	1	2	2	8	3 4 5	4	17	2+2	Do.
147	157	39	1	2	2	8	3 4 5	4	17	2+2	Do.
149	151	40	1	2	2	8	3 4 5	5-5	17	2+2	Do.
151	145	49	1	2	2	8	3 4 5	4-5	17	2+2	Do.
153	145	51	1	2	2	8	3 4 5	4	17	2+2	Do.
155	149	52	1	2	2	8	3 4 5	4	17	2+2	Do.
158	154	37	1	2	2	8	3,4,5	4	17	2+2	Do.
159	146	49	1	2	2	8	3 4 5	4-5	17	1+2	Do.
										2+2	Do.
810	153	47	1	2	2	8	3 4 5	4-5	17	2+2	Bureau of Science
809	151	44	1	2	2	8	3 4 5	4	17	2+2	Do.
1483	149	43	1	2	2	8	3,4,5	4	17	2+2	Do.
323	143	(a)	1	2	2	8	3 4 3,4,5	4	17	2+2	E. H. Taylor
324	146	59	1	2	2	8	3,4,5	5	17	2+2	Do.
325	145	53	1	2	2	8	3,4,5	5	17	2+2	Do.

[a] Mutilated

either side of this are broad light lines, bordered below by a row of minute white spots edged with black, below this the color is darker brown; on either side of the ventrals is a row of small whitish dots as well as the large triangular black spots

Remarks.—The species is not rare and is probably found in all the larger islands of the Philippines, with the exception of the Palawan group, where I suspect it is wanting. On Mount Canlaon, Occidental Negros, and in Bunawan, Agusan, Mindanao, it appeared to be very common Specimens are known from several localities in Mindanao, Negros, and Mindoro and from Luzon, Masbate, and Lubang Islands The most northern record is Ifugao, Mountain Province, Luzon, the most southern, Zamboanga. The species is confined to the Philippines

On Canlaon Volcano several of the specimens taken contained remains of small *Pseudorhabdium menamarae* or *Calamaria ger-*

varia virdescens, which they would disgorge when captured. The female lays five or six eggs which are about 2 centimeters long when newly laid. These are placed usually under a log. On one occasion a set of eggs was obtained from the interior of a small ant hill at the base of a tree; when opened the eggs were found to contain embryos almost completely developed.

The snake is small and inconspicuous and in consequence is not readily recognized as distinct by the Filipinos who class it with certain other snakes to which is applied the name *ahas na tulog* (sleeping snake), this is scarcely appropriate, as the snake is very active and quick to take offense. The Manobos of Mindanao regard it as the young of the black and yellow cobra, *Naja samarensis*, which they call *haguason*, the Ifugaos of northern Luzon regard it as a deadly snake, and manifest great fear of it. The wound made by the bite is rather painful due to the enlarged front teeth. Needless to say, it has no poison.

The species can be readily recognized by the single row of subcaudals, and the triangular black spots on the belly.

HOMALOPSINÆ

Nostrils valvular, on upper surface of snout; dentition well developed, hypapophyses developed throughout vertebral column, grooved fangs in posterior part of mouth. Aquatic snakes, giving birth to their young. More or less poisonous, but not dangerous.

This subfamily is confined to eastern Asia, Malaysia, and the Papua-Australian region. It contains about ten genera, most of which contain only single species. Only *Hurria* and *Fordonia* are positively known to occur in the Philippines. *Gerardia* has been frequently included in Philippine faunal lists on the authority of Duméril and Bibron, who report *Gerardia prevostiana* Eydoux and Gervais from Manila. The specimen so reported very probably originated in Ceylon, or on the Indian coast.

Key to the Philippine genera of the Homalopsinæ

a^1 Nasals in contact, scales keeled . . . . . Hurria Daudin (p. 110)

a^2 Nasals separated by an internasal, scales smooth . . . . . Fordonia Gray (p. 115)

Genus HURRIA Daudin

Hydrus, part, Schneider, Syst. Amph. 1 (1799) 233.

Hurria Daudin, Bull. Soc. Philom. Paris 3 (1803) 187, Stejneger, Bull. U. S. Nat. Mus. 58 (1907) 304.

Hurria FISCHER, Zoognosia ed 3, 1 (1813) 65
Hurrianus RAFINESQUE, Anal Nat (1815) 77
Strephon GOLDFUSZ, Handb Zool. 2 (1820) 151
Cerberus CUVIER, Reg Anim 2d ed 2 (1829) 81, GRAY, Zool Misc (1842) 64, Cat Vip Snakes (1849) 63; DUMERIL and BIBRON, Erp Gen 7 (1854) 977, GUNTHER, Rept Brit India (1864) 278, BOULENGER, Fauna Brit India, Rept (1890) 374, Cat Snakes Brit. Mus 3 (1896) 15, BOETTGER Ber Senck Nat Ges (1886) 110, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 431

"Maxillary teeth 12 to 17, followed, after a very short interspace, by two slightly enlarged, grooved teeth, anterior mandibular teeth longest. Head small, not very distinct from neck, eye small, with vertically elliptic pupil, snout covered with shields; parietal shields more or less broken up into scales; nasals in contact behind the rostral, semidivided, the cleft extending from the nostril to the first or second labial; two internasals (rarely united); loreal present. Body cylindrical; scales striated and keeled, without pits, in 23 to 29 rows; ventrals rounded. Tail moderate, slightly compressed, subcaudals in two rows." (*Boulenger.*)

Two species are found in the Philippines, the widely distributed *Hurria rynchops* (Schneider) and the rare *Hurria microlepis* (Boulenger); the latter appears to be confined to the Philippines

Key to the Philippine species of Hurria Daudin

a^1 Four lower labials touching first chin shields, scales in 23 to 27 rows, strongly keeled, ventrals, 132 to 160
H rynchops (Schneider) (p 111)

a^2 Three lower labials touching first chin shields, scales in 29 rows, feebly keeled, ventrals, 163 to 165 H microlepis (Boulenger) (p 114)

These snakes are more aquatic than terrestrial in habits They are somewhat poisonous, but certainly not deadly poisonous to man

HURRIA RYNCHOPS (Schneider)

Hydrus rynchops SCHNEIDER, Hist Amph 1 (1799) 246
Elaps boæformis SCHNEIDER, Hist Amph 2 (1801) 301
Hydrus cinereus SHAW, Gen Zool 3 (1802) 567
Hurria schneideriana DAUDIN, Nat Hist Rept 5 (1803) 281
Hurria bilineata DAUDIN, Nat Hist Rept 5 (1803) 284
Coluber cerebus DAUDIN, Nat Hist Rept 7 (1803) 167
Homalopsis cerberus FITZINGER, Neue Class Rept (1826) 55
Python elapiformis MERREM Tent Syst Amph (1820) 89
Python rhynchops MERREM, Tent Syst Amph (1820) 90
Cerberus rhynchops GUNTHER, Rept Brit India (1864) 279, Proc Zool Soc London (1879) 78, BOULENGER, Fauna Brit India, Rept (1890) 374, Cat Snakes Brit Mus 3 (1896) 16, BOETTGER, Ber Senck Nat Ges (1886) 110

Cerberus cinereus CANTOR, Proc Zool Soc London (1839) 54, GRAY, Cat Vip Snakes (1849) 64
Cerberus acutus GRAY, Cat Vip Snakes (1849) 65.
Cerberus unicolor GRAY, Cat Vip Snakes (1849) 65
Cerberus boæformis PETERS, Mon Berl Ak (1861) 687
Homalopsis boæformis JAN, Elenco Syst Ofid (1863) 77
Hurria rynchops STEJNEGER, Bull U S Nat Mus 58 (1907) 304.
Hurria rynchops GRIFFIN, Philip Journ Sci § A 4 (1909) 599, § D 5 (1910) 213, § D 6 (1911) 263, TAYLOR, Philip Journ Sci. § D 12 (1917) 364

Description of species.—(From No 663, E H. Taylor collection; collected at Himigaran, Occidental Negros, February 19, 1914, by E H Taylor) (Adult female) Rostral pentagonal, wider than high, a pair of large, irregular nasals immediately behind rostral and separating it from internasals; nostrils half-moon-shaped provided with valves, situated near back part of nasal scales, with a small suture running down to edge of each scale and partly dividing it; 2 small triangular internasals, somewhat unequal, followed by prefrontals, latter twice the size of internasals, frontal broken into 2 large and several small scales, parietals broken into numerous small scales; preocular elongate and fused below eye with second postocular, separating labials from eye, loreal lozenge-shaped, touching internasal; temporals not distinguishable from parietals or body scales, 11 supralabials, vertically elongate, seventh, eighth, and sixth largest in the order named, first very much elongate, separating second labial from nasal; on the right side first labial is broken into two parts, above last 3 labials is a much enlarged scale; mental narrow, triangular, 12 lower labials, seventh, sixth, and fifth largest in the order named; last lower labials are very small and scarcely differentiated; 4 labials touching first pair of chin shields, second pair of chin shields almost entirely between first pair and labials; 25 scale rows, all strongly keeled except the 3 outer; ventrals, 156, anal divided, subcaudals, 66 pairs, head slender, with neck slightly constricted; body short and thick, more than twice as wide as head in its widest part, all the scales show very fine but distinct striations; scales on head imbricate

Color in life—Above drab to ashy gray, with about fifty narrow, irregular, broken bars across body, not reaching ventrals laterally, an indistinct light stripe running from snout across upper labials, following the three outer scale rows, and not crossed by dark bars, lower and upper labials with dusky spots, dark stripe begins behind eye and continues to some distance

on neck, a narrow three-armed spot on occipital region; throat dirty whitish; anterior part of ventral surface mottled with large, irregular mottlings, which grow more numerous through middle and back part of body, ventral surface of caudal region almost black; head dark, similar to body

Measurements of Hurria rynchops (Schneider)

	mm
Total length	670
Snout to vent	525
Tail	145

Variation.—Stejneger gives the following limits of variation in scale counts: Scale rows, 23 to 27; ventrals, 132 to 160; subcaudals, 49 to 72. In thirty-three specimens I examined the ventrals range from 140 to 165, the average being 157. In four specimens there are more than 160, in two, less than 150. Subcaudals range from 51 to 68, the average being 58. Scale rows around body vary between 23 and 27; only one specimen, the largest examined, has 27 rows. The posterior labial in all the specimens is small and scarcely distinguishable, frequently the anterior upper labials are broken across the top, while the posterior upper labials are broken across the bottom.

The specimens vary considerably in markings, some being dull lead color with dim darker marblings, while others are light brown with distinct spots or bars. The markings in the young are distinct.

TABLE 19.—*Measurements and scale counts of Hurria rynchops (Schneider)*

No.	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals
				mm	mm		
502	Bantayan	L. E. Griffin	♀	855	135	156	60
506	do	do	♂	735	138	162	60
507	do	do	♂	730	145	160	58
509	do	do	♀	770	135	151	54
510	do	do	♂	785	157	150	58
512	do	do	♂	815	152	165	58
515	do	do	♂	782	158	159	60
518	do	do	♂	670	130	158	59
520	do	do	♂	750	165	156	68
521	do	do	♂	680	120	159	59
522	do	do	♀	790	130	159	51
523	do	do	♂	696	138	163	60
529	do	do	♂	715	120	154	*51
530	do	do	♂	745	152	158	61
----	Manila	M. Ligaya	♀	960	170	150	66

* Mutilated.

TABLE 19.—*Measurements and scale counts of Hurria rynchops (Schneider)*—Continued

No.	Scale rows	Labials		Touch first chin shields	Loreal touches internasal	Collection
		Upper	Lower			
502	24	11	13	4	Yes	Bureau of Science
506	23	11	14	4	do	Do
507	23	10	13	4	do	Do
509	25	11	14	4	do	Do
510	23	10–11	13	4–5	do	Do
512	23	11	13	4	do	Do
515	24	11–10	13	4	Barely	Do
518	23	10–11	11–12	4	Yes	Do
520	23	9–11	13	4	do	Do
521	24	11	13	4	do	Do
522	23	11		4	Barely	Do
523	23	10	12	4	Yes	Do
528	25	11	13	4	On one side	Do
530	23	11	12	4	Yes	Do
	27	13–12	14 14	b4 2	Barely	Do

b Injured

Remarks.—This widely distributed snake is found from India to the Pelew Islands, occurring in Ceylon, Malay Peninsula, the East Indies, and the Moluccas. In the Philippines it has been reported from Luzon, Mindanao, Palawan, Negros, Bantayan, Cuyo, and Polillo.

HURRIA MICROLEPIS (Boulenger)

PLATE 6, FIGS. 1 TO 3

Cerberus cinereus, part, GRAY, Cat. Vip. Snakes (1849) 64.
Cerberus microlepis BOULENGER, Cat. Snakes Brit. Mus. 3 (1896) 18, pl. 2, fig. 2.

Description of species.—(From Boulenger.) "Closely allied to [*Cerberus*] *rhynchops*, but only three (exceptionally four) lower labials in contact with the anterior chin-shields; loreal not touching the internasal, scales much smaller, in 29 rows, rather feebly keeled; and ventrals more numerous, 163–165. Dark olive above, with darker spots, a dark streak on each side of the head, passing through the eye; yellowish beneath, much spotted or marbled with blackish.

"Total length 660 millim., tail 120."

Remarks.—The types were collected by H. Cuming, the exact localities are no longer known. Griffin reports a specimen of this species from Camiguin, Babuyan Islands. As the specimen

consists of only a head I am uncertain whether the identification is correct Only three lower labials touch the first chin shields

Genus FORDONIA Gray

Homalopsis, part, Schlegel, Phys Serp 2 (1837) 332
Fordonia Gray, Zool Misc (1842) 67, Cat Vip Snakes (1849) 76, Gunther, Rept Brit India (1864) 277, Boulenger, Fauna Brit India, Rept (1890) 378, Cat Snakes Brit Mus 3 (1896) 21
Hemiodontus Duméril and Bibron, Mem Ac Sci 23 (1853) 494, Erp Gen 7 (1854) 882
Hemiodontus, part, Jan, Arch Zool Anat Phys 3 (1865) 263

Maxillary teeth small, 7 or 8, followed by 2 enlarged grooved teeth Mandibular teeth subequal Head depressed, short, broad, scarcely distinct from neck; body stout, cylindrical; tail short. Eye very small, pupil vertical, upper surface of head with large shields; nostril pointing up in a single nasal, an internasal separating nasals, no loreal; 5 upper labials, body cylindrical, scales smooth without apical pits, ventrals rounded, tail short; subcaudals all or part in 2 rows.

FORDONIA LEUCOBALIA (Schlegel)

Homalopsis leucobalia Schlegel, Phys Serp 2 (1837) 345, pl 13, figs 8 and 9, Schlegel and Muller, Verh Nat Nederl Overz Bezitt, Rept (1844) 61, pl 8, Cantor, Cat Mal Rept (1847) 102, pl 40, fig 5 var
Fordonia leucobalia Gray, Zool Misc (1842) 67, Cat Vip Snakes (1849) 77, Boulenger, Fauna Brit India, Rept (1890) 378, Sclater, Journ As. Soc Bengal 60 (1891) 245, Boulenger, Cat Snakes Brit Mus 3 (1896) 21
Fordonia unicolor Gray, Cat Vip Snakes (1849) 77, Gunther, Rept Brit India (1864) 277, Zool Rec (1865) 154, Theobald, Cat Rept Brit India (1876) 182, Peters and Doria, Ann Mus Genova 13 (1878) 389, Boettger, Ber Senck Nat Ges (1892) 26 (Philippines)
Hemiodontus leucobalia Duméril and Bibron, Erp Gén 7 (1854) 884, Jan, Arch Zool Anat Phys 3 (1865) 264, Icon Gén (1868) 28. pl 6, fig 1
Hemiodontus chalybæus Jan, Elenco Syst Ofid (1863) 79
Fordonia bicolor Theobald, Journ Linn Soc 10 (1868) 56, Cat Rept Brit India (1876) 181
Fordonia variabilis Macleay, Proc Linn Soc N S W 2 (1878) 219

Description of species—(From Boulenger) "Rostral nearly as deep as broad, frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals, one præ- and two postoculars; temporals 1 + 3 or 2 + 3, five upper labials, third entering the eye; three lower labials in contact with the anterior chin-shields, which are small

and a little larger than the posterior. Scales in 25 to 29 rows Ventrals 130–156, last frequently divided, anal divided; subcaudals 26–43 Coloration of upper parts very variable, lower parts uniform yellowish white"

Measurements of Fordonia leucobalia (Schlegel)

	mm
Total length	930
Snout to vent	820
Tail	110

Remarks—This species is included on the strength of Boettger's record of a specimen from Manila, collected by Moellendorff.

LANGAHINÆ

Hypapophyses developed throughout the vertebral column, nostrils not valvular, lateral; terrestrial snakes. Not poisonous

The bulk of this subfamily appears to be confined to Madagascar It is surprising to find this single isolated genus *Hologerrhum* in the Philippines. This has been placed in the Langahinæ on the basis of the diagnostic characters given by Boulenger Save for this fact it might easily be regarded as a species of *Cyclocorus*, which it resembles in a superficial manner

Genus HOLOGERRHUM Gunther

Hologerrhum GUNTHER, Cat Col Snakes (1858) 186, BOETTGER, Ber Senck Nat Ges (1886) 115, BOULENGER, Cat Snakes Brit Mus 3 (1896) 33, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 438

"Maxillary teeth 20, equal, followed, after a short interspace, by a pair of enlarged, grooved fangs, anterior mandibular teeth strongly enlarged Head slightly distinct from neck; eye moderate, with round pupil Body cylindrical; scales smooth, without pits, in 17 rows; ventrals rounded Tail moderate, subcaudals single. Hypapophyses developed throughout the vertebral column * * *." (*Boulenger.*)

This genus, comprising a single species, is confined to the Philippine Islands

HOLOGERRHUM PHILIPPINUM Guntner

PLATE 7, FIG 1

Hologerrhum philippinum GUNTHER, Cat Col Snakes (1858) 186, Proc Zool Soc London (1873) 171, pl. 18, fig B, BOETTGER, Ber Senck Nat Ges (1886) 115, BOULENGER, Cat Snakes Brit Mus 3 (1896) 33, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 438, GRIFFIN, Philip Journ Sci § D 6 (1911) 263 (*Hologerrhum* err typ)

Cyclocorus maculatus JAN, Icon Gén (1870) 86, pl 6, fig 3

Cyclocorus lineatus maculata FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 81

Description of species.—(From Boulenger.) "Rostral broader than deep, scarcely visible from above; internasals as long as broad, a little shorter than the præfrontals; frontal twice as long as broad, longer than its distance from the end of the snout, a little shorter than the parietals; loreal as long as deep; two præ- and two postoculars; temporals, 1 + 1; eight upper labials, third, fourth, and fifth entering the eye; four lower labials in contact with the anterior chin-shields, which are shorter than the posterior. Scales in 17 rows. Ventrals 144; anal entire; subcaudals 40. Brown above, with a few alternating black spots on the anterior part of the back, and one or two black cross-bars behind the head; a black streak on each side of the head; passing through the eye, upper lip yellowish, a black line on each side of the posterior part of the body and of the tail; lower parts yellowish, with a black dot at the outer end of each ventral shield, on the tail these dots are confluent into a line."

Measurements of Hologerrhum philippinum Gunther

	mm
Total length	280
Snout to vent	228
Tail	52

Remarks.—The exact type locality of this species is no longer known, and only a few specimens have been collected. Fischer reports it from southern Mindanao, and a specimen was recently taken in northern Kalinga, Luzon †.

CORONELLINÆ

Hypapophyses absent on the posterior dorsal vertebræ, the lower surfaces of which are smooth. All maxillary teeth solid, none grooved. Scales imbricating, ventrals enlarged transversely. Nonpoisonous.

A large number of genera belong to this family. They occur in all temperate and tropical parts of the world. Fifteen genera are recognized in the Philippines.

Key to the Philippine genera of the Coronellinæ

a^1 Anterior temporals present, parietals separated from labials
  b^1 Pupil vertically elliptical
    c^1 Scales without apical pits, smooth
      d^1 Posterior maxillary teeth increasing in size, anterior maxillary and mandibular teeth strongly enlarged, anterior maxillary teeth separated from the rest by an interspace, scales in 17 to 19 rows . . . . . Ophites Wagleri (p. 118)

† Boulenger, Cat. Snakes Brit. Mus. 3 (1896) 33, in a footnote states "The specimen from Placer, Mindanao, referred to this species by Gunther (Proc. Zool. Soc. 1879, p. 78), belongs to *Cyclocorus lineatus*."

d^2 Anterior maxillary teeth, increasing in size to eighth which is much enlarged, followed by an interspace, followed by 3 small and 3 large teeth, scales in 17 rows
Haplonodon Griffin (p 126)

d^3 Anterior maxillary teeth, 15 to 20, increasing in size toward the middle of the series, then decreasing to the last 2 or 3 which are large, anterior mandibular teeth large, scales in 17 rows
Stegonotus Duméril and Bibron (p 129)

c^2 Scales with or without apical pits (absent in Philippine species), scales smooth, maxillary teeth, 8 to 10, rather short but stout, increasing in size posteriorly; anterior mandibular teeth slightly larger than posterior, scales in 13 or 15 rows
Dryocalamus Gunther (p 131)

b^2 Pupil round

c^1 Longitudinal scale rows in even numbers maxillary teeth, 20 to 23, increasing in size posteriorly, scales in 14 to 18 rows, with apical pits Large snakes. Zaocys Cope (p 134)

c^2 Longitudinal scale rows in odd numbers

d^1 Ventrals and subcaudals not or but feebly keeled

e^1 Maxillary teeth, 8 to 12, posteriorly compressed, scales in 13 to 21 rows, smooth or feebly keeled, with or without apical pits Holarchus Cope (p. 138)

e^2 Similar to *Holarchus*, maxillary teeth, 6 to 8, posteriorly compressed, pterygoid teeth absent, palate without teeth, or with 2 or 3 on each palatine, scales in 15 to 17 rows
Oligodon Boie (p 146)

e^3 Maxillary teeth equal or nearly so, or posterior ones slightly decreasing in size

f^1 Scales with apical pits Large snakes

g^1 Scales in 23 to 27 rows Gonyosoma Wagler (p 152)

g^2 Scales in 21 rows Elaphe Fitzinger (p 155)

f^2 Scales without apical pits Liopeltis Fitzinger (p 161)

d^2 Ventral and subcaudal scales strongly keeled and notched

e^1 Maxillary teeth, 20 to 33, slightly enlarged posteriorly, median scale row distinctly enlarged, scales in 13 to 15 rows, with apical pits Dendrophis Boie (p 165)

e^2 Maxillary teeth, 18 to 23, anterior longest, median scale row not or but slightly enlarged, scales in 13 to 15 rows, with apical pits Dendrelaphis Boulenger (p 169)

a^2 No anterior temporals, parietals in contact with labials

b^1 Internasals present

c^1 Eye distinct Pseudorhabdium Boulenger (p 177)

c^2 Eye hidden Typhlogeophis Gunther (p 182)

b^2 Internasals absent, eye distinct Calamaria Boie (p 183)

Genus OPHITES Wagler

Lycodon, part, Boie, Isis (1827) 521, Wagler, Syst Amph (1830) 186, Schlegel, Phys Serp 2 (1837) 104, Duméril and Bibron, Erp Gen 7 (1854) 367, Gunther, Cat Col Snakes (1858) 201; Rept Brit India (1864) 315, Jan, Elenco Syst Ofid (1863) 95

Ophites WAGLER, Syst Amph (1830) 186, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 397, GUNTHER, Cat Col Snakes (1858) 206, Rept Brit India (1864) 322, JAN, Elenco Syst Ofid (1863) 95, STEJNEGER, Bull U S Nat Mus 58 (1907) 356, GRIFFIN, Philip. Journ Sci § D 6 (1911) 258 *

Cercaspis WAGLER, Syst Amph (1830) 191, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 389; GUNTHER, Cat Col Snakes (1858) 207; Rept Brit India (1864) 323, JAN, Elenco Syst Ofid (1863) 94

Leptorhytaon GUNTHER, Cat Col Snakes (1858) 205; Rept Brit India (1864) 323

Tetragonosoma GUNTHER, Cat Col Snakes (1858) 253, Rept Brit India (1864) 320

Tytleria THEOBALD, Cat Rept As Soc Mus (1868) 66

Lycodon BOULENGER, Fauna Brit India, Rept (1890) 291, Cat Snakes Brit Mus 1 (1893) 348, BOETTGER, Ber Senck Nat Ges (1886) 114, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 437

"Maxillary bent inwards anteriorly in the adult, the three to six anterior teeth increasing in size, fang-like, and separated by a toothless interspace from the rest, seven to fifteen in number, which increase in size posteriorly; anterior mandibular teeth longest, fang-like Head not or but slightly distinct from neck, more or less depressed, eye small or moderate, with vertically elliptic pupil, nostril large or rather large. Body more or less elongate, cylindrical or slightly compressed; scales smooth or keeled, in 17 or 19 rows, with apical pits; ventrals with or without a lateral keel. Tail moderate; subcaudals single or double" (*Boulenger.*)

The genus is a comparatively large one with about eighteen known species. It is distributed over southern Asia, and the Malay Peninsula and Archipelago. Three species enter the Philippines, but only the rare *Ophites tessellatus* (Jan) appears to be confined to the Islands The species best known in the Philippines is *Ophites aulicus* (Linnæus), which is commonly found about houses and stone walls. This species is known as *culebra casera* and *ahas-na-tulog* (sleeping snake) The latter name is indeed a good one, as it describes its characteristic habit of remaining motionless when first disturbed The species of this genus appear to feed almost wholly on small lizards of the Geckonidæ and Scincidæ They are absolutely harmless and rarely attempt to bite They thrive well in captivity and readily take food.

* Stejneger, Bull. U S Nat Mus 58 (1907) 356 *b*, has shown that the long-accepted name *Lycodon* is fixed for a South American genus of snakes, usually known as *Lycognathus* The next name chronologically is *Ophites* Wagler

Key to the Philippine species of Ophites Wagler *

a^1 A preocular, separating eye from prefrontal
  b^1 Nasal single ventrals not angulate — 0 tessellatus (Jan) (p 124).
  b^2 Two nasals, ventrals laterally angulate. — 0 aulicus (Linnæus) (p 120)
a^2 No preocular, prefrontal entering eye — 0 subcinctus (Boie) (p 124)

OPHITES AULICUS (Linnæus)

Coluber aulicus LINNÆUS, Mus. Ad Frid 1 (1754) 29, pl 12, fig 2, Syst Nat ed 10 1 (1758) 220

Lycodon aulicus BOIE, Isis (1827) 551. COPE, Proc Acad Sci Philadelphia (1860) 262 (var), PETERS, Mon Berl Ak. (1861) 688, GUNTHER, Rept Brit India (1864) 316, Proc Zool Soc London (1879) 18, Zool Rec (1870) 75, JAN, Icon Gén (1870) 36, pl 4, fig 1, THEOBALD, Cat Rept Brit India (1876) 199, MURRAY, Zool Sind (1884) 383, FISCHER, Jahrb wiss Anst Hamburg (1885) 81, BOULENGER, Fauna Brit India, Rept (1890) 294, Cat Snakes Brit Mus 1 (1893) 352 (and varieties), BARBOUR, Mem Mus Comp Zool Harvard Coll 44 (1912) 114

Lycodon capucinus BOIE, Isis (1827) 551

Lycodon unicolor BOIE, Isis (1827) 551

Lycodon hebe SCHLEGEL, Phys Serp 2 (1837) 106 pl 4, figs 1–6

Lycodon aulicus, part, CANTOR, Cat Mal Rept (1847) 68, DUMERIL and BIBRON, Erp Gén 7 (1854) 369, GUNTHER, Cat. Col Snakes (1858) 201

Tytleria hypsirhinoides THEOBALD, Cat Rept As Soc Mus (1868) 66

Ophites aulicus GRIFFIN, Philip Journ Sci § A 4 (1909) 596, § D 6 (1911) 258, TAYLOR, Philip Journ Sci § D 12 (1917) 359

Description of species.—(From No 161, E. H. Taylor collection; collected in Manila, June 1, 1915, by E H Taylor) Snout and head rather flattened, lips extended, rostral much broader than deep, scarcely visible from above, bent at a strong angle, internasals moderate, not quite as long as prefrontals; latter form their longest suture with each other, their sutures with other scales being subequal in length. frontal not twice as long as wide, forming its longest suture with supraocular, the suture with preocular being very small, length of frontal nearly equal to its distance from end of snout; parietals longer than but not as wide as frontal, bounded behind by 3 enlarged scales, 1 medially and 2 laterally; nostril pierced between 2

* Casto de Elera lists *Lycodon modestum* Schlegel (= *Stegonotus modestum*), *Lycodon bandi* Steindachner (= *Psammodynastes pulverulentus*), *Lycodon culcullatum* (= *Stegonotus culcullatus*), which probably does not occur in the Philippines, and *Lycodon capucinus*, which is a variety of *Ophites aulicus*

small nasals, the anterior somewhat the larger, loreal large, subrectangular, forming its longest suture with prefrontal, not twice as long as wide; a large preocular extending from frontal to third labial; supraocular smaller than preocular but a little longer, 2 small postoculars subequal in size Temporals $\frac{1}{1+2}+4$, 9 upper labials, fifth, sixth, seventh, and eighth largest; third, fourth, and fifth labials entering eye: 10 lower labials, sixth and fifth largest, mental small, 5 labials touch first chin shields (4 on right side), mental small, triangular; 2 pairs of chin shields, first pair longest, nearly equal in length to first labials, scales in 17 rows, smooth, outer row somewhat enlarged, eye small, pupil vertical; head distinct from body, very much flattened, with lips and temporal regions swollen, ventrals, 197, anal double; subcaudals, 74, double, tail slender, terminating in a long, sharp point.

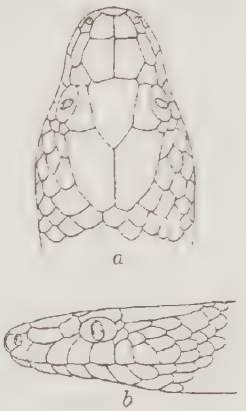


FIG 11 *Ophites aulicus* (Linnaeus) after Boulenger *a* head, dorsal view, *b* head, lateral view

Color in life—Grayish slate to purplish brown above with an irregular network formed by darker scales bordered with white; on neck a dim lighter band forming a broad collar, fore part of head darker slate; lips and neck whitish, each scale with a darker area, lower surfaces immaculate cream white.

Variation—But little variation occurs in this species among specimens found in the various Philippine islands The following differences, however, are in evidence. Specimens from the Visayan islands of Masbate, Bantayan, and Negros have the temporals 1 + 2 for the most part instead of 2 + 3, which is the usual formula elsewhere It will be noted from the table that there is a tendency to a reduction in the number of labials touching the anterior chin shields in Luzon specimens. The range of ventrals is 194 to 210; of subcaudals, 62 to 78 These counts are well within the limits set by Boulenger.*

One specimen in the collection from Almora, India, differs considerably The head is rather narrow and pointed, the preoculars are not in contact with the frontal, which is true of Philippine specimens, the frontal is proportionally shorter, and

* Loc cit

the subcaudal count is 89, much higher than the range limit noted by Boulenger * The whitish network on the body forms rather definite white bars on the anterior part of the body

Remarks—Boulenger * has referred all his Philippine specimens under his "variety D" (*Lycodon aulicus capucinus* Boie)

In the more than thirty Philippine specimens examined, I find no variations which warrant subspecific treatment I find that variations in markings are due chiefly to age; variations in scalation for the most part do not appear constant This species is known to occur in most of the larger Philippine islands, with the possible exception of Palawan, and in some of the smaller ones Griffin states that a specimen was taken in Palawan by C M. Weber and that this is in the Bureau of Science collection The only one of this species collected by Weber in the collection is from Cuyo, and I believe this is the specimen referred to by Griffin Certainly if it is found in Palawan it is

TABLE 20.—*Measurements and scale counts of Ophites aulicus (Linnæus)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals
				mm	mm		
166	Occidental Negros	H McNamara	♀	578	74	199	a87
166	do	do	♂	485	86	200	65
167	do	E H Taylor	♂	460	92	189	70
168	do	H McNamara	♂	325	53	199	63
170	do	do	♀	470	85	202	67
171	do	do	♂	310	65	200	66
174	do	do	♀	480	91	196	66
259	Masbate	V Jednicky	♀	360	63	198	65
287	do	do	♀	385	65	199	62
663	Bantayan	I E Griffin	♀	500	30	198	..
537	do	do	♂	360	50	195	..
654	Cuyo	C M Weber	♂	510	91	190	70
1484	Mindoro	Marine Biological Expedition	♀	540	93	191	66
84	Manila	L F Griffin	♂	525	110	194	76
641	do	W Schultze	♀	650	96	198	66
1825	do	L D Griffin	♀	780	103	206	a43
1329	do	do	♀	781	112	202	69
1520	do	S F Light	♂	675	103	206	78
1524	do	do	♂	560	88	210	67
1529	do	do	♂	637	a95	204	a56
1552	do	L E Griffin	♂	445	92	194	71
161	do	E H Taylor	♀	522	105	197	74
R 1314	Almora India		♂	..	..	206	89

a Mutilated

* Catalogue, loc cit

TABLE 20.—*Measurements and scale counts of Ophites aulicus (Linnæus)*—Continued

No	Labials				Postoculars	Scale rows	Temporals	Collection
	Upper	Lower	Enter eye	Touch chin shields				
165	9	10	3 4 5	5	1	17	2+3	E H Taylor
166	9	10	3, 4, 5	5	2	17	1+2+3 / 2+3	Do
167	9	10	3, 4, 5	5	2	17	1/2 +3	Do
168	9	10	3 4, 5	5	2	17	1+2+3	Do
170	9	10	3, 4, 5	5	2	17	1 -2+3	Do
171	9	10	3, 4, 5	5	2	17	1+2- 3	Do
174	9	10	3, 4 5	5	2	17	1/2 −3	Do
286	9	10	3, 4, 5	5	2	17	1/1+2 −4	Do
287	9	10	3 4 5	5	2	17	1+2+3	Do
668	9	10	3, 4, 5	4-3	2	17	1+2+3	Bureau of Science
837	9	10	3, 4, 5	5	2	17	1+2+3	Do
654	9	10	3 4 5	5	2	17	2+3	Do
1484	9	10-9	3 4 5	5-4	2	17	2+3	Do
84	9	10	3 4 5	5	2	17	2+3	Do
641	9	10-9	3 4 5	4-5	2	17	2+3	Do
1326	9	10	3 4 5	4	2	17	2+3	Do
1329	9	10	3 4 5	4-5	2	17	2+3	Do
1520	9	10	3 4 5	5	2	17	2+3 / 2+4	Do
1524	9	10	3 4 5	4-5	2	17	2+3 / 2+4	Do
1529	9	10	3 4 5	4-5	2-1	17	2+3	Do
1552	9	10	3 4, 5	4-5	2	17	2+3	Do
161	9	10	3 4 5	5 4	2	17	1/1+2 +4	E H Taylor
R 1314	9	10	3 4 5	5	2	17	2-4	Bureau of Science

rare, since several other collections made there contain no specimen of this common snake

In Manila it is especially common in houses, where it feeds on the small geckos, *Peropus mutilatus*, *Cosymbotus platyurus*, and *Hemidactylus frenatus* One gentleman assured me that he had killed fourteen in his house during a single rainy season It is absolutely harmless, usually very gentle, and may be handled with impunity.

Known from Luzon, Mindanao, Mindoro, Panay, Negros, Bantayan, Masbate It is uncommon in eastern Mindanao, as not a specimen was found in my two years' collecting there Fischer * reports *Lycodon aulicus* var from southern Mindanao

* Loc cit

OPHITES TESSELLATUS (Jan)

Lycodon tessellatus JAN, Elenco Syst Ond (1863) 96, Icon Gen (1870) 36, pl 4, fig 2, MULLER, III Nachr Cat Herp Samml Basel Mus (1883) 17, BOETTGER, Ber Senck Nat. Ges (1886) 114; BOULENGER, Cat Snakes Brit Mus 1 (1893) 351; CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 437

Ophites tesselatus GRIFFIN, Philip Journ Sci § D 6 (1911) 258 (typ err)

Description of species.—"Snout moderately depressed; eye rather small. Rostral broader than deep, just visible from above; internasals much shorter than the præfrontals; frontal nearly as long as its distance from the end of the snout, slightly shorter than the parietals; loreal elongate, not entering the eye, forming a suture with the internasal, one præ- and two postoculars, temporals small, scale-like, 2 + 3, nine upper labials, third, fourth, and fifth entering the eye, four lower labials in contact with the anterior chin-shields, which are longer than the posterior. Scales smooth, in 17 rows. Anal divided. Subcaudals in two rows. Above with three series of alternating black spots, ventrals and subcaudals brown, edged with whitish" (*Boulenger*.)

Remarks.—The type locality is "Manila auf Luzon." This is the only exact locality known. Muller's specimen is labeled "Philippinen." Evidently this species is very rare.

OPHITES SUBCINCTUS (Boie)

PLATE 8

Lycodon subcinctus BOIE, Isis (1827) 551, SCHLEGEL, Phys Serp 2 (1837) 117, pl 4, figs 14, 15, BOULENGER, Proc Zool Soc London (1890) 34

Lycodon platurinus CANTOR, Cat Mal Rept (1847) 69

Ophites subcinctus DUMÉRIL and BIBRON, Erp Gén 7 (1854) 398, GUNTHER, Cat Col Snakes (1858) 206, Rept Brit India (1864) 322, JAN, Icon Gén (1870) 36, pl 5, fig 4, BLANFORD, Proc Zool Soc London (1881) 222, pl 21, fig 2, GRIFFIN, Philip Journ Sci § A 4 (1909) 596, § D 6 (1911) 258

Elapoides annulatus SAUVAGE, Bull Soc Philom VII 8 (1884) 144

Description of species.—(From No. 659, Bureau of Science collection; collected at Iwahig, Palawan, August 26, 1908, by C. M. Weber.) (Adult male.) Head and snout much depressed, almost spatulate; rostral scarcely visible above, much broader than high, the sutures with internasals and nasals subequal; internasals small, about one-third the size of prefrontals, narrowed medially, about as wide as long; prefrontals large, about as wide as long, longest on sides, forming mutual suture, entering eye; frontal longer than wide, longer than and more than twice as wide as supraoculars, much shorter than its dis-

tance from end of snout, and much shorter than parietals, latter moderate, about one and a half times as long as broad, bordered by 3 temporals and a postocular; nasal apparently entire, narrowed in the middle, the posterior portion higher and rather pointed behind, no preocular, loreal elongate, twice as long as high, widely separated from internasal, entering eye, in contact with 2 labials below, supraocular about twice as long as wide; 2

FIG 12 *Ophites subcinctus* (Boie) drawing of a Palawan specimen *a*, head, dorsal view, *b*, head lateral view × 2

small postoculars; temporals 2 + 2 + 2 on left side, and 1 + 2 + 2 on right, third upper largest, 8 upper labials, third, fourth, and fifth entering eye, seventh largest; mental very small, wider than deep; 9 lower labials, 4 touching anterior chin shields, which are wider and somewhat enlarged, scales in 17 rows, the 11 median rows slightly but distinctly keeled; ventrals, 208, angulate laterally; anal divided; subcaudals, 64 pairs; eye small, less than its distance from nostril

Color in alcohol.—Above dull purplish, banded with 10 light lavender bands, each about 6 scales wide, darker medially; the first band crosses occipital region; labials light colored; throat and belly yellowish without markings; tail dimly banded with 6 bands almost same shade as ground color: below yellowish white

Measurements of Ophites subcinctus (Boie)

	mm
Total length	505
Snout to vent	416
Tail	89
Width of head	11

Variation.—A second specimen in the collection agrees with the described specimen, save that the head is less flattened, due

probably to the fact that it is younger. The rostral is a little more exposed above, and the postoculars are fused into one scale. The temporal formula is 1 + 2 + 2. The color above is a dark brown with 16 white bands from head to tail; a brown streak, partially following the parietal suture, divides the occipital band

TABLE 21.—*Measurements and scale counts of Ophites subcinctus (Boie)*

No	Locality	Collector	Sex or age	Length	Tail
				mm	*mm*
659	Iwahig Palawan	C M Weber	♂	505	89
751	do.	do	♀	251	44

No	Ventrals	Subcaudals	Anals	Scale rows	Labials enter eye	Postoculars	Width of head	Collection
659	208	61	2	17	3 4 5	2	11	Bureau of Science
751	199	64	2	17	3 4 5	1	7	Do

The Palawan form agrees quite well with the specimens from Asia and Java Boulenger gives the variation in ventrals as 198 to 227, in subcaudals, 61 to 89 He also mentions the following variations Sometimes the sixth labial enters the eye, making 4 in all, sometimes the loreal does not enter the eye, the anal is rarely entire The two specimens above recorded are the first and, I believe, the only records for the Philippines.

Genus HAPLONODON Griffin

Haplonodon GRIFFIN, Philip Journ Sci § D 5 (1910) 211, § D 6 (1911) 258

"Maxillary teeth in two series, separated by a short interspace, the posterior teeth of each series largest, 14 or 15 in all Anterior end of maxilla bent slightly inward

"Anterior mandibular teeth enlarging to the fourth, followed by smaller teeth of equal size Head distinct from neck. Eye moderate, pupil vertically elliptic Body slender, slightly compressed; tail long Scales smooth, in 17 longitudinal rows, without apical pits, subcaudals in two rows." (*Griffin*)

Only a single species known Exclusively a Philippine form

HAPLONODON PHILIPPINENSIS Griffin

PLATE 9

Haplonodon philippinensis GRIFFIN, Philip Journ Sci § D 5 (1910) 212, text fig 1, pl 1, § D 6 (1911) 258

Description of species.—(From the type, No 883, Bureau of Science collection, collected in Polillo, October 1909, by C Canonizado) (Adult male) Anterior end of maxillary curved inward but slightly, teeth on maxilla increase in size from first to eighth, the last 3 or 4 strong and fanglike, after a short interspace 3 small teeth follow, which in turn are followed by 3 large teeth, fanglike and laterally compressed; the 4 anterior mandibular teeth increase in size to fourth, and are considerably larger than the remaining ones which are of nearly equal size, head somewhat triangular, rather flat, distinct from neck, rostral broader than deep, folded about snout, its posterior part pointed and entering between internasals, the portion visible above being equal to one-third its distance from rostral, internasals small, narrowed medially, the suture between them one-third to one-fourth that between prefrontals, latter large, more than four times the size of internasals, more than two-thirds the length of frontal, latter almost straight on its anterior margin, about as broad as long, twice the width of supraoculars and a little longer, parietals elongate, bordered by 3 (4 on right side) temporals, nearly twice as long as frontal, nasal single, of very irregular shape, elongate, anterior part much lower than posterior, nostril pierced obliquely; a loreal present, more than twice as long as wide, entering eye; a single preocular narrowly separated from frontal, 2 small subequal postoculars, temporals 2 + 2; 9 upper labials, fourth and fifth entering eye, seventh and eighth largest and nearly equal, 9 lower labials, 5 in contact with anterior chin shields which are larger than posterior, mental much wider than deep, scales smooth, in 17 rows, without apical pits; body slender, distinctly compressed: lateral keels on ventrals, but scales not noticeably notched, ventrals, 203; anal entire, subcaudals, 95 (tip of tail missing)

FIG 18 *Haplonodon philippinensis* Griffin *a* head dorsal view, *b*, head, ventral view

Color —Dorsal surface of body and tail crossed by seventy-nine dark brown bands, separated by narrow bands of white, finely dotted with brown; the edges of latter bands pure white, outlining the darker and broader bands prettily, in the dorsal portions of the lighter bands the brown dots are often confluent, producing a grayish brown color, dots finer and more

separated toward ventral surface, ventral portions of most of the brown bands narrowly separated from dorsal parts by fine white lines, a large brown spot on end of most of ventral scales, ventral surface of head and body white; brown dots become increasingly numerous on lower surface as anus is approached, lower surface of tail closely covered with brown dots, upper surface of head very dark brown, almost black, adorned by a reticulate pattern of fine white lines, centers and lower edges of upper labial scales white, their adjoining edges brown; all scales extremely smooth and glossy.

Measurements of Haplonodon philippinensis Griffin

	mm
Total length	800
Tail	196
Head length	23
Head width	13

Variation.—A second specimen taken near Los Baños, Luzon, is smaller and immature. The head is triangular, very distinct from body, and noticeably flattened. There are eighty-five brown bars across the body, thirty-one of which belong to the tail. The tail is extremely slender. The color of the specimen is darker brown than that of the adult described.

TABLE 22.—*Measurements and scale counts of Haplonodon philippinensis Griffin.*

No.	Locality	Collector	Sex or age	Length
				mm
a 883	Polillo	C. Canonizado		800
211	Los Baños, Luzon	E. H. Taylor	♂	805

No.	Tail	Ventrals	Subcaudals	Upper labials	Scale rows	Labials enter eye	Collection
	mm						
a 883	196	203	95	9	17	4-5	Bureau of Science
211	81	206	127	9	17	4-5	E. H. Taylor

a Type.

Remarks.—These two specimens are the only ones known, which is rather remarkable in view of the fact that the localities known are on separate islands. Evidently it is extremely rare.

It is unknown to the inhabitants of Polillo, according to Griffin.[1] The people in the locality where it was taken by myself said they had never seen a similar specimen.

[1] Philip. Journ. Sci. § D, 5 (1910) 213.

Genus STEGONOTUS Duméril and Bibron

Lycodon, part, SCHLEGEL, Phys Serp 2 (1837) 104, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 367, JAN, Elenco Syst Ofid (1863) 97
Stegonotus DUMÉRIL and BIBRON, Mem Ac Sci 23 (1853) 477, Erp Gén 7 (1854) 680, BOULENGER, Cat Snakes Brit Mus 1 (1893) 364
Herpetodryas, part, JAN, Elenco Syst. Ofid (1863) 80
Laelaphis GUNTHER, Proc Zool Soc London (1863) 59, (1877) 129
Zamenophis GUNTHER, Ann. & Mag Nat Hist IV 9 (1872) 21
Pseudolycodon PETERS, Mon Berl Ak (1876) 534
Spilotes PETERS, Mon Berl Ak (1861) 685, BOETTGER, Ber Senck Nat Ges (1886) 108, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 92
Odontomus BOETTGER, Ber Senck Nat Ges (1886) 114, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 437

"Maxillary teeth 15 to 20, increasing in size towards the middle of the series, then decreasing in size to the two or three last, which are again large, anterior mandibular teeth enlarged Head more or less distinct from neck, eye moderate or rather small, with vertically elliptic pupil. Body elongate, cylindrical or feebly compressed, scales smooth, with apical pits, in 17 rows; ventrals obtusely angulate laterally. Tail moderate or long, subcaudals in double or single row." (*Boulenger*)

There are two species known from the Philippines.

Key to the Philippine species of Stegonotus Dumeril and Bibron

a^1 Ventrals, 220 to 232; subcaudals, 100 pairs, over 2 meters in length
S muelleri Duméril and Bibron (p 129)

a^2 Ventrals, 195 to 214, subcaudals, 112 to 123, about 1 meter in length
S dumerili Boulenger (p 130)

The genus *Stegonotus* is distributed over the eastern Philippines, the Moluccas, Papuasia, and northern Australia. No species has yet been discovered in Celebes or Borneo. The two species found in the Philippines are endemic Both are rare They are nonpoisonous.

STEGONOTUS MUELLERI Duméril and Bibron

Stegonotus muelleri DUMÉRIL and BIBRON, Erp Gén 7 (1854) 682, BOULENGER, Cat Snakes Brit Mus 1 (1893) 367, GRIFFIN, Philip Journ Sci § D 6 (1911) 259
Spilotes samarensis PETERS, Mon Berl Ak (1861) 685, BOETTGER, Ber Senck Nat Ges (1886) 108, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 429
Herpetodryas muelleri JAN Elenco Syst Ofid (1863) 81

Description of species.—(After the type description of *Spilotes samarensis* Peters) Frontal not quite as long as

broad, almost triangular, the anterior edge a straight line, rounded behind; an elongate loreal, longer than deep; 2 preoculars and 2 postoculars, 9 upper labials, fourth and fifth entering eye, 2 long anterior temporals followed by 3 others, the anterior in contact with postoculars, scales in 17 smooth rows, ventrals, 232, anal entire, subcaudals, 81 pairs

Color.—Upper side of head dark olive, lips and underside dirty yellow-white, upper part of body darker with large, broad, dark flecks, below uniform dirty yellow

Measurements of Stegonotus muelleri Duméril and Bibron

	mm
Total length	2,070
Snout to vent	1,680
Tail	390
Length of head	50

Variation.—Boulenger gives the known ventral range for the species 220 to 232, that of the subcaudals, 81 to 100 As to the color of the type (?) he states "Uniform brown above, lips and lower parts dirty yellowish white"

Remarks.—Only three or four specimens of this rare snake have been found, all apparently from Samar Island It attains a length of more than 2 meters It is harmless to man

STEGONOTUS DUMERILII Boulenger

Lycodon mulleri DUMÉRIL and BIBRON, Erp Gen 7 (1854) 82, GUNTHER, Cat Col Snakes (1858) 203

Odontomus muelleri GUNTHER, Proc Zool Soc London (1879) 78, BOETTGER, Ber Senck Nat Ges (1886) 114, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 437

Stegonotus dumerilii BOULENGER, Cat Snakes Brit Mus 1 (1893) 368, GRIFFIN, Philip Journ Sci § D 6 (1911) 259

Description of species.—(From an unnumbered specimen, Santo Tomás Museum, labeled "Filipinas," collector unknown, local name, *taling bilao*) Head distinct from neck, rather spatulate, rostral broader than deep, narrowly but distinctly visible from above, pointed behind, nearly as deep as broad, its smallest suture formed with first labial, its largest with internasal, latter about as wide as deep, narrowed medially, the suture between them being about half of that between prefrontals, latter much broader than deep, in contact with both preoculars and forming their smallest suture with inferior preocular, frontal longer than broad, its sides nearly parallel, its anterior edge a straight line, as long as its distance from end of snout, shorter than parietals, scarcely twice as broad as

supraocular; parietals very much elongate, almost twice as broad as long, touching only 1 postocular; nasal elements mutilated but nasal apparently a single scale, elongate, the nostril near the middle; 1 loreal a little longer than high, 2 preoculars coequal in size, nearly as large as loreal and larger than postoculars; supraoculars nearly twice as long as wide, 3 postoculars, upper largest; temporals 2 + 3, 8 temporals bordering parietals, 9 upper labials, fourth and fifth entering eye, sixth and seventh largest; 9 lower labials, 5 touching anterior chin shields, which are very much larger than second pair and widely separated from each other at their upper ends; eye quite large, with pupil distinctly vertical, oval, 17 scale rows, smooth, outer row not enlarged, ventrals, 198, anal single, subcaudals, 122.

Color in alcohol.—Above dark purplish brown with eighteen white bands on body and fourteen on tail, each band three scales wide on back and widening to four or five on side, small whitish spots in temporal region and on lower edges of upper labials, yellowish below, of a muddy color under tail

Measurements of Stegonotus dumerili Boulenger

	mm
Total length	335
Snout to vent	240
Tail	95

Remarks.—I have been able to examine only this single, very young specimen of *Stegonotus dumerili*. It differs from Boulenger's description in having 3 instead of 2 postoculars, and in the color and markings However, these differences in color and markings may be due to the age of the specimen.

Boulenger lists four specimens The ventrals and subcaudals vary between 195 and 214, and 112 and 123, respectively The counts for the specimen described lie within these limits.

Known from Samar (Boettger), Surigao (Gunther), and Daraga and the Iriga Volcano, Luzon (Peters) It is not known outside the Philippines.

Genus DRYOCALAMUS Gunther

Nympha (non Martini) Fitzinger, Neue Class Rept (1826) 29
Lycodon, part, Schegel, Phys Serp 2 (1837) 104
Odontomus (non Kirby) Duméril and Bibron, Mem Ac Sci 23 (1853) 463, Erp Gen 7 (1854) 450, Gunther, Cat Col Snakes (1858) 206, Jan, Elenco Syst Ofid (1863) 95, Gunther, Rept Brit Ind (1864) 233
Dryocalamus Gunther, Cat Col Snakes (1858) 121, Boulenger, Cat Snakes Brit Mus 1 (1893) 369

Hydrophobus GUNTHER, Ann & Mag Nat Hist III 9 (1862) 127, BOULENGER, Fauna Brit India, Rept (1890) 297
Nymphophidium GUNTHER, Rept Brit India (1864) 235
Ulupe BLANFORD, Journ As Soc Bengal 47 (1878) 129

"Maxillary teeth 8 to 10, rather short but stout, increasing in size posteriorly; anterior mandibular teeth a little longer than the posterior, one or two more or less distinct tooth-like knobs on the basisphenoid Head distinct from neck, much depressed, eye moderate or rather large, with vertically elliptic pupil Body slender, slightly compressed, scales smooth, in 13 or 15 rows, with apical pits,† ventrals strongly keeled on each side Tail moderate, subcaudals in two rows" (*Boulenger*)

The genus is small, only six or seven species being known Three are found in the East Indies *Dryocalamus subannulatus* is confined to the Malay Peninsula and Sumatra, *D tristrigatus* is found in Borneo and the Natuna Islands and *D philippinus* is found in Palawan The last species resembles *D tristrigatus* in markings, and is otherwise similar save for the absence of apical pits on scales Snakes of this genus are harmless

DRYOCALAMUS PHILIPPINUS Griffin

PLATE 10, FIG 2, PLATE 11, FIGS 1 AND 2

Dryocalamus philippinus GRIFFIN, Philip Journ Sci § A 4 (1909) 596, § D 6 (1911) 259

Description of species.—(From No 240 E H Taylor collection, collected at Balabac, 1915, by C M Weber) Head distinct from neck, rather flattened, rostral more than one and a half times as broad as high, part visible above less than one-third its distance from frontal, internasals about as wide as long, the suture between them equaling the suture between prefrontals, latter larger than internasals, bending down on sides, wider than deep, frontal broadly angled anteriorly, less than one and one-third times as long as broad, longer than its distance from end of snout, as long as or minutely shorter than parietals, latter longer than wide, touching superior postocular; nasal large, with nostril very small, pierced near its center; loreal very large, nearly twice as long as wide, entering eye, no preocular (or, if present, fused with suprаocular), 3 postoculars, subequal in size, 2 anterior temporals with the formula $\frac{1}{1+2}$ +3, 7 upper labials, third and fourth entering eye labials

† There are no apical pits in *Dryocalamus philippinus* Griffin.—E H T

in the following order of size sixth, fifth, fourth, third, seventh, second, first; 7 lower labials, 4 touching anterior chin shields, which are more than twice as large as second pair; scales in 15 smooth rows, without apical pits, ventrals, 216; subcaudals, 87, both ventrals and subcaudals strongly keeled and turned up on side, anal single

Color in alcohol.—Above dark black-brown with a median cream-colored stripe covering median scale rows and the edges of the two adjoining rows; a second stripe on fourth row of scales; below this a black-brown stripe covering third and part of second scale rows; outer scale row cream, below immaculate, the lateral edges of ventrals with brown dots except on anterior part of body; head dark with lighter markings of cream on posterior part of head; upper labials yellowish

Measurements of Dryocalamus philippinus Griffin

	mm
Total length	375
Snout to vent	287
Tail	88
Length of head	15
Width of head	6 8

Variation.—The type is a small immature specimen in the Bureau of Science collection and was collected by W Schultze in Iwahig, Palawan A second specimen in the Bureau of Science collection is also from Palawan. This specimen has largely lost its color in alcohol, the head has much more light marking than the described specimen, and agrees with that of the type

TABLE 23.—*Measurements and scale counts of Dryocalamus philippinus Griffin*

No	Sex or age	Locality	Collector	Length	Tail	Ventrals
				mm	*mm*	
419	♀	Iwahig Palawan	I E Griffin	486	116	225
420	yg	do	W Schultze	241	57	216
240	♂	Balabac	C M Weber	375	88	216

No	Subcaudals	Labials		Enter eye	Touch chin shields	Preocularis	Postoculars	Collection
		Upper	Lower					
419	96	7	7-8	3 4	4	1	3	Bureau of Science
420	99	7	7	3 4	4	1	2-3	Do
240	87	7	7	3 4	4	0	3	E H Taylor

The known range of the ventrals is 216 to 225; of the subcaudals, 87 to 99 The specimen from Balabac has no preocular (being fused with the supraocular), but a preocular is present in both the type and the second Palawan specimen The type has only 2 postoculars on the left side and 3 on the right Three is the normal number of postoculars

Remarks—This species, as has been remarked by Griffin, is related to *Dryocalamus tristrigatus* Gunther, and strongly resembles it in color and markings The apical pits in the scales are absent in this species, the postoculars are three instead of two; and a preocular is normally present Griffin remarks as follows on the dentition in the type.

> Maxillary teeth 8, the last two considerably larger than the others, compressed toward their points, and separated from the first six by a short space The anterior mandibular teeth are slightly longer than the posterior There is one distinct tooth-like knob on the basisphenoid

The species is known only from Palawan and Balabac. It is not poisonous

Genus ZAOCYS Cope

Coryphodon, part, GUNTHER Cat Col Snakes Brit Mus (1858) 107, JAN, Elenco Syst Ofid (1863) 63
Zaocys COPE, Proc Acad Nat Sci Philadelphia (1860) 563, GUNTHER, Rept Brit India (1864) 255, BOETTGER, Ber Senck Nat Ges (1886) 108, BOULENGER, Fauna Brit India, Rept (1890) 329, Cat Snakes Brit Mus 1 (1893) 374, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 428
Herpetodryas, part, JAN, Elenco Syst Ofid (1863) 80
Zaprys GUNTHER, Rept Brit India (1864) 256

"Maxillary teeth 20 to 33, increasing in size posteriorly, mandibular teeth subequal Head elongate, distinct from neck, eye large, with round pupil, a subocular beneath the præocular Body elongate, a little compressed, scales smooth or keeled, with apical pits, in 14, 16, or 18 rows, ventrals rounded Tail long, subcaudals in two rows" (*Boulenger*)

Two species occur in the Philippines

Key to the Philippine species of Zaocys Cope

a^1 Scales smooth, in 14 rows Z luzonensis Gunther (p 135)
a^2 Scales keeled on 2 or 4 middle rows, scales in 16 to 18 rows Z carinatus Gunther (p 136)

Zaocys luzonensis Gunther is known only from the type and two other specimens, *Z carinatus* is found in the Philippines only in Palawan and appears to be confined to that island, where it is not rare

Casto de Elera includes *Coryphodon fuscus?* (= *Zaocys fuscus*) from Borongan, Samar; also under the same genus, *Coryphodon*, he lists *C. mucosus* (=*Ptyas mucosus*) Linnæus from Bataan, Luzon, *C. Korros* (=*Ptyas korros*) Reinwardt from Manila, and *C. hexanotus* (=*Xeneluphis hexagonotus*) Cantor from the Calamianes. It is highly probable that these records are erroneous.

ZAOCYS LUZONENSIS Günther

PLATE 12, FIGS. 1 AND 3, PLATE 13, FIGS. 1 AND 2

Zaocys luzonensis (GUNTHER, Proc. Zool. Soc. London (1873) 169; BOETTGER, Ber. Senck. Nat. Ges. (1886) 108, BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 377, pl. 26, fig. 2, GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 259.

Description of species.—"Rostral as deep as broad, visible from above; internasals shorter than the præfrontals; frontal once and one third as long as broad, as long as its distance from the end of the snout, a little shorter than the parietals; loreal at least twice as long as deep; one præocular, with a subocular below it, two postoculars; temporals 2 + 2; eight upper labials, fourth and fifth entering the eye, five lower labials in contact with the anterior chin-shields, which are much shorter than the posterior. Scales smooth, in 14 rows. Ventrals 205, anal divided, subcaudals 119. Pale olive-brown above, the scales edged with black, lower parts yellow, turning to dark olive posteriorly." (*Boulenger.*)

Measurements of Zaocys luzonensis Gunther

	mm
Total length	2,500
Snout to vent	1,850
Tail	650

Remarks.—The type in the British Museum is a male from Luzon, collected by A. B. Meyer, the exact locality is no longer known. A specimen from Leyte is reported by Boettger.*

The species is represented in the Bureau of Science collection by the head of a specimen (Plate 13, figs. 1, 2) captured at Saraı, Paete, Laguna Province, Luzon, by R. C. McGregor. According to field notes the specimen measured 2.24 meters. The following are the characters of the head scales: Rostral narrowly visible above, one-fifth wider than high, internasals broader than long, prefrontals very much broader than deep, frontal little longer than its distance from rostral, one-fourth longer than wide, a little shorter than parietal, as long as but

* Ber. Senck. Nat. Ges. (1890) lxiii.

much wider than supraocular, parietals longer than wide, the part bending down behind eye ending in a sharp point, touching only anterior postocular, posterior nasal higher than interior but less broad; loreal rectangular, twice as long as high, 2 preoculars, superior widely separated from frontal, scarcely visible above, five or six times as large as the inferior; 2 postoculars, superior largest, 2 elongate anterior temporals placed diagonally, both touching inferior postocular, 2 posterior temporals, 8 upper labials, fourth and fifth entering orbit (the 2 scales partially fused on the left side), 10 lower labials, 5 touching anterior pair of chin shields, which are less than two-thirds as long as posterior, posterior chin shields in contact for half their length, touching 3 lower labials, scales with apical pits, in 16 rows around neck (at a point 2 centimeters behind parietals), eye large, its diameter equal to its distance from nostril; a distinct depression across the head in the anterior parietal region

Measurements of Zaocys luzonensis Gunther

	mm
Total length[a]	2,240
Length of head	47
Width of head	28
Depth of head at eye	16
Length of snout from eye	13
Diameter of eye	9

[a] From field notes of Mr. McGregor

ZAOCYS CARINATUS Gunther

PLATE 12, FIGS. 2 AND 4

Coryphodon carinatus, part, GUNTHER, Cat. Col. Snakes Brit. Mus. (1858) 112

Zaocys carinatus GUNTHER, Rept. Brit. India (1864) 256; BOULENGER, Cat. Snakes Brit. Mus. 1 (1893) 377, pl. 27, fig. 1; GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 259; BARBOUR, Mem. Mus. Comp. Zool. Harvard Coll. 44 (1912) 115

Ptyas korros, part, BLANFORD, Proc. Zool. Soc. London (1881) 221

Description of species.—(From No. 1342, Bureau of Science collection, collected at Iwahig, Palawan, March, 1911, by C. H. Lamb.) Head elongate, distinct from neck, rostral about one and one-fifth as wide as deep, narrowly visible from above, its suture with nasals longer than sutures with internasals; latter wider than long, a little more than one-third the size of prefrontals and widely separated from loreal, prefrontals about as long as wide, in contact laterally with both loreals, frontal a little longer than wide, wider than supraoculars but shorter, its length equal to its distance from rostral, parietals longer than wide, only a little longer than frontal, nostril between 2 nasals,

2 loreals, the anterior largest and in contact with upper preocular, 2 preoculars, the upper very large, the lower very small; 2 postoculars, 2 anterior temporals (the posterior temporals are fused with the lower anterior; normally 2 + 2), 9 upper labials, fifth and sixth entering eye, 9 lower labials, 5 touching anterior chin shields, anterior chin shields shorter and narrower than posterior, scales with apical pits (those on body with 2, those on neck with 3 or more pits), scales in 16 rows on body, 20 rows about neck, the 2 median dorsal rows strongly keeled, commencing back some distance on neck and continuing a short distance on tail, on latter half of body the scale rows bordering the median rows are also keeled, and immediately above anus all the scale rows are strongly keeled, ventrals, 207, anal divided; subcaudals, 108 (extreme tip of tail missing), eye large, equal to its distance from anterior part of nostril

Color in alcohol.—Above dark olive gray anteriorly, netted over with whitish yellow, the network formed by the yellow edges of the two vertical scale rows, and the yellowish skin between them (the yellow color scarcely observable, unless the skin is distended) forming alternating scale rows with black edges and black skin between them, posteriorly the ground color becomes a lighter olive brown, and the yellowish network more pronounced and denser; the black color on latter part of body forms irregularly edged longitudinal lines, three on each side, that on the outer row of scales is most pronounced, its zigzag edges extending to ventrals, ventral scales on anterior part of body yellowish, posteriorly also yellowish, with dark spots or dim lines, a pronounced median zigzag line on ventral surface of tail, tail, above with each scale heavily edged with black, and with a circular, light yellow, central area

Measurements of Zaocys carinatus Günther

	mm
Total length	2,340
Snout to vent	1,782
Tail	558
Head length	51
Head width	28

Variation.—A second specimen in the Bureau of Science collection, also from Palawan, has only the 2 median scale rows keeled, there are 3 loreals instead of 2, the 2 posterior being superimposed, the temporals are normal The recorded range of ventrals for extra-Philippine specimens[1] is 208 to 215; of

[1] Boulenger, loc cit

subcaudals, 110 to 118; the range of ventrals is extended somewhat by the scale count of the described specimen. The scale rows, 16 or 18 on middle of body

Remarks.—This species has only recently been found in Palawan and was first reported by Griffin. This is the only Philippine island where it has been found and there it is said to be common. It grows to a length of more than 3 meters. Superficially it resembles *Naja hannah* Cantor in both size and markings. It is harmless. It is also known from Java, Sumatra, Borneo, and the Malay Peninsula.

TABLE 24.—*Measurements and scale counts of Zaocys carinatus Gunther*

No.	Sex	Locality	Collector	Length	Tail
				mm.	mm.
1342	♂	Iwahig, Palawan	C. H. Lamb	2340	568
1340	♂	do	do	1830	465

No.	Ventrals	Subcaudals	Labials		Scale rows		Collection
			Upper	Lower	Neck	Body	
1342	207	108	9	9	20	16	Bureau of Science
1340	204	114	9	9	20	16	Do.

Genus HOLARCHUS * Cope

Coronella, part, SCHLEGEL, Phys. Serp. 2 (1837) 50.

Xenodon, part, SCHLEGEL, Serp. 2 (1837) 80.

Simotes, part, DUMERIL and BIBRON, Mem. Ac. Sci. 23 (1853) 472, Erp. Gen. 7 (1854) 624, GUNTHER, Cat. Col. Snakes (1858) 23.

Simotes JAN, Arch. Zool. Anat. Phys. 2 (1863) 232, GUNTHER, Rept. Brit. India (1864) 212, BOETTGER, Ber. Senck. Nat. Ges. (1886) 107, BOULENGER, Fauna Brit. India, Rept. (1890) 309, Cat. Snakes Brit. Mus. 2 (1894) 214, CASTO DE ELERA, Cat. Fauna Filipinas 1 (1895) 427.

Holarchus COPE, Proc. Am. Philos. Soc. 23 (1886) 488, STEJNEGER, Bull. U. S. Nat. Mus. 58 (1907) 353, GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 259, TAYLOR, Philip. Journ. Sci. § D 13 (1918) 359.

Dicranlus COPE, Am. Nat. (1893) 480.

* Stejneger says "The generic name *Simotes*, by which the snakes of this genus have long been designated is preoccupied by *Simotes* of Fischer for a group of mammals as early as 1817. It has consequently to be replaced. Cope proposed *Holarchus*, in 1887, as a term for those species of the genus which have an undivided anal. It is not believed that this character alone, which moreover is not always constant, is sufficient ground for a division of the genus, and as *Holarchus* is the name next in date after *Simotes* it must stand for the combined genus.

"Maxillary teeth 8 to 12, posterior very strongly enlarged and compressed, mandibular teeth subequal Head short, not distinct from neck, eye rather small, with round pupil, rostral large Body cylindrical, scales smooth or feebly keeled, in 19 to 21 rows, with or without apical pits; ventrals rounded or obtusely keeled laterally Tail short or moderate, subcaudals in two rows" (*Boulenger*)

The species of this genus are distributed through southern Asia, China, Japan, the Malay Peninsula, Sumatra, Java, Borneo, and the Philippines Four species enter our territory

Much confusion has resulted from a study of Philippine specimens, particularly *Holarchus ancorus*, which appears to have been described from an anomalous specimen

Key to the Philippine species of Holarchus Cope

a^1 Anal entire

b^1 Third and fourth labials entering eye

c^1 Loreal as long as deep, brown with a pink medial longitudinal line, and an indistinct lateral line, a row of dim black spots on second scale row, below bright rose
H meyerinki (Steindachner) (p 139)

c^2 Loreal longer than deep, pale brownish to lavender with 19 transverse dark spots, below yellow to bright pink
H ancorus (Girard) (p 140)

b^2 Fourth labial entering eye, loreal absent, pale lavender with 22 or 23 dark blackish brown dorsal blotches, yellowish below with black spots on ventrals . . . H maculatus Taylor (p 143)

a^2 Anal divided, fourth labial entering eye, loreal present, little longer than wide, dark purplish brown with a dull salmon streak dorsally, 22 narrow transverse dark blotches H burksi Taylor (p 145)

HOLARCHUS MEYERINKII (Steindachner)

PLATE 14, PLATE 17, FIGS 6 AND 7

Simotes meyerinkii STEINDACHNER, Sitzb Ak Wien (1891) 294
Holarchus meyerinkii, TAYLOR, Philip Journ Sci § D 13 (1918) 360
Simotes octolineatus BOULENGER var c, Cat Snakes Brit Mus 2 (1894) 224

Description of species.—(From No 188, Bureau of Science collection, collected at Papahag, Sulu Archipelago, October 14, 1917, by E H Taylor.) Rostral broader than deep, the portion seen from above a little more than half its distance from frontal; internasals much smaller than prefrontals, the suture between them little less than that between prefrontals, latter broader than long, touching only posterior part of nasal, frontal much longer than wide, longer than its distance from end of snout, longer and wider than supraocular and longer than parietals, latter longer than broad, bordered by 2 temporals, and touching

1 postocular, nasal partially divided, longer than deep, a small square loreal; preocular twice as long as wide, 2 postoculars, upper nearly twice as large as lower, temporals 2 + 2, only first upper touching postoculars, 6 upper labials, third and fourth entering eye, fifth and sixth rather narrowly in contact, mental small; 7 lower labials (6 on right side), first 4 bordering first pair of chin shields (3 on right side), second pair of chin shields about half as large as first pair, scales in 17 rows, 162 ventrals, rather angulate, subcaudals, 43, eye moderate, its diameter equal to its distance from anterior part of nostril

Color in life.—Above reddish brown, with a median, salmon-pink, longitudinal stripe covering one whole scale row, and two half scale rows, each scale of median row with a darker center; laterally a dim, grayish, longitudinal stripe; on second outer row of scales a series of dark dots, a series of dim dark spots on outer edge of ventrals, head darker brown, with elongate black spots on frontal and on inner part of parietals, a black stripe runs diagonally from neck to parietal, a dark spot below eye, belly bright, immaculate, rosy pink

Measurements of Holarchus meyeringki (Steindachner)

	mm
Total length	305
Snout to vent	257
Tail	48
Length of head	13
Width of head	9

Remarks.—This species appears to be confined to the Sulu Archipelago, the only definite records are Tawitawi and Bongao Islands. These two records seem to be the only ones other than the types which are labeled Sulu Islands with no definite localities named. This species is separated from *Holarchus octolineatus** on the basis of its distinctive coloration and the much smaller number of ventral and subcaudal scales

HOLARCHUS ANCORUS (Girard)

PLATE 17, FIGS. 1 AND 2, PLATE 18, FIG. 3

Xenodon ancorus GIRARD, Proc. Acad. Nat. Sci. Philadelphia (1857) 182, U. S. Expl. Exped., Herp. (1858) 167

Simotes purpurascens GUNTHER, Cat. Col. Snakes (1858) 25; PETERS, Mon. Berl. Ak. (1861) 684

* Barbour, Mem. Mus. Comp. Zool. Harv. 44 (1912) 118, states "*H. meyeringki* (Steind.) was doubtless evolved by isolation from specimens of this species [*H. octolineatus*] probably derived from Borneo.

Simotes phænochalinus COPE, Proc Acad Nat Sci Philadelphia (1860) 244, BOULENGER, Cat Snakes Brit Mus 2 (1894) 225, BOETTGER, Ber Senck Nat Ges (1886) 107, FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 80, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 427

Simotes aphanospilus COPE, Proc Acad Nat Sci Philadelphia (1860) 245, BOETTGER, Ber Senck Nat Ges (1886) 107

Simotes anconalis JAN, Arch Zool Anat Phys 2 (1863) 233, Icon Gén 11 (1865) pl 4, fig 2, SIEBENDACHNER, Novara, Rept (1867) 61, MULLER, III Nacht Cat Herp Samml Basel Mus (1883) 14

Holarchus phænochalinus GRIFFIN, Philip Journ Sci § D 6 (1911) 259

Holarchus anconus TAYLOR, Philip Journ Sci § D 13 (1918) 361

Description of species.—(From No R 429, E H Taylor collection; collected in Manila, June 15, 1915, by E H Taylor.) (Adult male) Rostral large, much higher than wide, portion of rostral seen above nearly equal to its distance from frontal, sharply pointed behind; internasals, small, wider than deep, their mutual suture shortest, their longest suture with prefrontal; latter nearly twice as wide as deep, the suture between them somewhat longer than that between internasals, frontal much wider in front than behind, longer than its distance from end of snout, little longer than wide, twice the width of supraocular, parietals scarcely longer than wide, equal to or a little longer than frontal, nasal partially divided, the anterior part largest, loreal longer than wide; 1 preocular, 2 postoculars, supraocular twice as long as wide, temporals 1 + 2: 7 upper labials, third and fourth entering eye, 7 or 8 lower labials, first 4 in contact with first pair of chin shields, mental small, wider than deep, not in contact with anterior chin shields, which are one and a half times the length of posterior, scales in 17 smooth rows with no apical pits, eye large, equal to its distance from nostril; ventrals, 163, anal single, subcaudals, 42, eye less than its distance from nostril

Color in life.—Brownish lavender above with a series of eighteen large, dark, purplish spots edged with black, each extending across back to first or second row of scales, below immaculate cream yellow, subcaudals with dull brown spots, a large anchor-shaped, black-edged spot on nape of neck and another on head, the front of which forms a band that crosses head and eyes diagonally and includes fifth and sixth labials, the main branch of anchor, which runs back medially, increases in width toward neck where it bifurcates, sending a branch to each side of neck; a diagonal temporal streak present, traces of a yellowish vertebral streak visible

Measurements of Holarchus ancorus (Girard).

	mm
Total length	551
Snout to vent	459
Tail	92
Width of head	14
Length of head	17

Variation.—There seems to be much variation in this species, as the attached table shows. The only definite localities given are on Luzon, and it is highly probable that specimens without locality marks are also from that island. The ventrals vary between 149 and 165, the subcaudals, between 34 and 43. The temporals vary equally between 1 + 2 and 2 + 2. One specimen (No. 1554, Bureau of Science collection) has only a single labial (the third) entering the eye, however, there is an obvious fusion of the third and fourth labials. In No. 700, Bureau of Science collection, the anchor-shaped marking is disconnected on the frontal, thus following the marking in *H. burksi*. In all the specimens save the one described there are indications of narrow bands between the larger dark bands; they are usually represented by a few irregular dots across the body or merely by lateral dots. No variations are noted in the number of preoculars, postoculars, anals, or loreals.

TABLE 25.—*Measurements and scale counts of Holarchus ancorus (Girard).*

No.	Sex or age	Locality	Length	Tail	Ventrals	Subcaudals
			mm	mm		
613	♀ ad.	Manila	220	20	160	34
700	♀ ad.	Benguet	280	15	164	43
752	♀	Unknown	545	85	165	40
820	♀	Zambales	475	65	163	37
910	♂	Bataan	515	65	163	42
1654	♀	Unknown	498	87	149	43
429	♀	Manila	551	92	163	42

No.	Upper labials	Lower labials	Labials entering eye	Scale rows	Temporals	Collection
613	7	6	3 4	17	1+2	Bureau of Science
700	7	8	3 4	17	2+2	Do.
752	7	7	3 4	17	2+2	Do.
820	7–8	7	3 4	17	2+2	Do.
910	7	7	4 5	17	1+2	Do.
			3 4	17	2+2	Do.
1654	6	7	3	17	1+2	Do.
429	7	6	3 4	17	1+2	L. H. Taylor

Remarks.—Boulenger * has placed *Xenodon ancorus* Girard as a questioned synonym of this species. The differences are obvious. In *X. ancorus* there are two preoculars (the lower one very small) and there are eight upper labials, the fourth and fifth entering the eye. It is highly probable that this is merely a variation from the normal, as it otherwise agrees with the normal form. In one of the specimens (No. 910, Bureau of Science collection) we have the increased number of labials on one side, and the fourth and fifth labials entering the eye.

It is probably confined to the Philippines. The reference of specimens to Java is probably erroneous. The species is small, and absolutely harmless. It appears very gentle when handled. This species is not rare in Luzon.

HOLARCHUS MACULATUS Taylor

PLATE 15

Holarchus maculatus TAYLOR, Philip. Journ. Sci. § D, 13 (1918) 364, pl. 1.

Description of species.—(From the type, No. 40, E. H. Taylor collection; collected at Bunawan, Agusan, August, 1912, by E. H. Taylor.) Rostral moderate, higher than wide, portion visible above less than half its distance from rostral, suture between internasals as large as or larger than prefrontal suture, prefrontals much larger than internasals, in contact laterally with 2 labials, frontal hexagonal in shape, its length equal to parietals, a little longer than its distance from end of snout, parietals small, as wide as long, nasal not or at least only partially divided; nostril pierced near posterior margin; no loreal present; 2 small preoculars, upper twice as large as lower, supraocular not twice as long as wide; 2 postoculars; temporals 1 + 2 (on left side 1 + 1), 7 upper labials, only fourth entering eye, labials in the following order of size: sixth, fourth, fifth, seventh, third, second, first; mental small, twice as wide as deep, 7 lower labials, 3 touching first pair of chin shields, which are larger than second pair, eye equal to its distance from nostril or minutely less, scales smooth, in 17 rows, ventrals, 164; anal single, subcaudals double, 54 in number.

Color in life.—Above pale lavender, with a series of twenty-three broad blackish brown dorsal spots extending laterally to ventrals; dorsally the spots are seven or eight scales wide, but narrowed laterally to a width of one or two scales, the spots are edged with narrow whitish lines, the nuchal band runs forward

* Cat. Snakes Brit. Mus. 2 (1894) 225.

and stops with a blunt point on frontal scale; a narrow band crosses head anteriorly and includes eyes; a dark blotch on temporals, which is connected with this band, small spots on nasals, chin yellow, on edges of half of the ventrals are small spots, which involve one or two of the body scales, on each alternate ventral are two larger rectangular spots, throat variously spotted with dark, ventral surface yellow, below tail yellowish with very few spots or none

Measurements of Holarchus maculatus Taylor

	mm
Total length	299
Snout to vent	240
Tail	59
Length of head	14
Width of head	10 5

Variation.—A second specimen taken at the same locality (No 41, E. H Taylor collection) is very different in the scalation of the head, but it seems to be an abnormal specimen A small loreal is present on the right side of the head, and the two preoculars are fused into one, on the left side The first lower labial on both sides is broken in two, making it appear that there is a pair of minute chin shields behind the mental The temporal elements on the right side are not normal, the parietal is broken, and there are two anterior temporals In coloration and marking it is practically identical with the type. Both this and the type specimen are from Bunawan, Agusan I collected them from under piles of sod and trash

This form is obviously different from other Philippine species The markings are distinctive The loreal is absent, and only a single labial enters the eye, two preoculars are present These characters, together with many minor differences, separate it from *H meyeringi* and *H ancorus* From *H burksi* it is separated by markings and coloration and the above-mentioned characters, save that of the single labial entering the eye, on which the two forms agree

TABLE 26.—*Measurements and scale counts of Holarchus maculatus Taylor*

No	Locality	Length	Tail	Ventrals	Subcaudals	Upper labials	Lower labials	Preoculars	Postoculars	Loreals	Labials enter eye	Scale rows	Temporals	Collection
		mm	mm											
40	Bunawan, Agusan	299	59	164	61	7	7	2	2	0	1	17	(2+3) (1+3)	E. H. Taylor
41	... do	258	50	160	51	7	7	2 1	2	1 0	1	17	(2+3) (1+3)	Do

HOLARCHUS BURKSI Taylor

PLATE 16.

Holarchus burksi TAYLOR, Philip Journ Sci § D 13 (1918) 365, pl 2

Description of type.—(No 200, E H Taylor collection, collected at Sumagui, Mindoro, December, 1916, by Clark Burks.) Head rather distinct from neck, rostral high, bending back over snout, pointed behind; internasals narrowed on inner side, much wider than long, the suture between them much less than prefrontal suture; prefrontals somewhat rectangular, almost twice as wide as long, frontal shield-shaped, much longer than its distance from end of snout, equal to parietal in length, not twice as broad as supraocular but of nearly equal length; parietals as broad as long, bordered by 2 temporals; nasal undivided, the anterior portion much the higher; loreal large, longer than wide; a single elongate preocular, widely separated from frontal, 2 subequal postoculars, temporals 1 + 2; 7 upper labials, fourth alone entering eye; upper margin of labial series very much broken; 7 lower labials, 4 touching the large chin shields; second pair of chin shields about half the size of first pair; scales in 17 rows, smooth; the smallest scales are the dorsal, of angular shape, laterally, the scales are larger and rounding, ventrals, 154, anal divided, subcaudals, 32

Color in life.—Above grayish brown, becoming more gray laterally, with a median, dorsal salmon-pink streak going the length of body, body traversed by twenty saddlelike blotches which widen medially to the width of three scales and narrow greatly laterally, usually to the width of one scale, the blotches are black, inclosing a gray spot dorsally, the entire blotch edged with a narrow grayish white line, less apparent medially; between each two blotches laterally there is a series of two or three small, elongate, white-edged, dark spots, each smaller than a scale, neck with a forked blotch, each leg of which begins laterally at the seventh ventral and extends upward and forward where the two meet medially, some distance behind parietals, and run forward much narrowed to the middle of frontal, a dark broad line below eye which is more or less continuous with a band crossing snout on or about the anterior level of eyes, a diagonal line beginning on second ventral runs up to parietals, a spot below nostril and another on sixth labial; two or three spots on lower labials; four ventrals on neck with spots, ventrally, an immaculate, brilliant, rosy pink, almost red toward end of body

Measurements of Holarchus burksi Taylor

	mm
Total length	381
Snout to vent	334
Tail	47
Width of head	11
Length of head	13

Remarks.—In markings this species much resembles the Philippine *Holarchus ancorus*, but is well differentiated by having the single labial entering the eye, the undivided nasal, and the divided anal. It agrees with *H. woodmasoni* and *H. maculatus* in having a single labial entering the eye; the differences from the latter are pointed out under the discussion of that species, from the former it differs by a very much reduced number of subcaudals and ventrals and the undivided anal; the coloration also is totally different. Its closest affinity seems to be with *H. beddomii*, which also has an undivided nasal and a divided anal. This species differs in having the fourth and fifth labials entering the eye. The markings and coloration are also quite different. The species is named for Mr. Clark Burks, who collected the unique specimen and presented it to me.

Genus OLIGODON Boie

Oligodon Boie, Isis (1827) 519, Wagler Syst. Amph. (1830) 191, Duméril and Bibron, Erp. Gen. 7 (1854) 54, Gunther, Cat. Col. Snakes (1858) 20, Rept. Brit. India (1864) 205, Jan, Arch. Zool. Anat. Phys. 2 (1862) 36, Boettger, Bei. Senck. Nat. Ges. (1886) 106, Boulenger, Fauna Brit. India, Rept. (1890) 317, Cat. Snakes Brit. Mus. 2 (1894) 233, Castro de Elera, Cat. Fauna Filip. as. 1 (1895) 426.

Calamaria, part, Schlegel, Phys. Serp. 2 (1837) 25.

Homalosoma, part, Jan, Arch. Zool. Anat. Phys. 2 (1862) 33.

Rhynchocalamus Gunther, Proc. Zool. Soc. London (1864) 491.

Tropeltis Cope, Proc. Am. Philos. Soc. 23 (1886) 487.

Maxillary teeth, 6 to 8; the posterior somewhat enlarged and compressed, no pterygoid teeth, the palate being without teeth or with 2 or 3 on each palatine, head short and not or but slightly distinct from neck, eye small, pupil round, body cylindrical, scales in 15 or 17 rows, anal single or double, nasal single or double.

This genus is closely related to *Holarchus*, there being no sharp dividing line between them.

Oligodon is a genus with a large number of species distributed from northeastern Africa, through southern Asia, and the Malay Archipelago. Four species have been described from the Philippines.

Key to the Philippine species of Oligodon Boie *

a^1. Scales in 15 rows, anal entire
  b^1. One postocular
    c^1 No loreal, dark brown with a yellowish vertebral streak, below yellowish with large, rectangular, black spots, chevron-shaped bands on head Southern Negros O modestus Gunther (p 147)
    c^2 A small loreal, dark purplish brown above with yellow dots and a series of 18 large, rhomboidal, brownish yellow, black-edged spots, yellowish below Mindanao and Balabac O notospilus Gunther (p 148).
  b^2 Two postoculars, loreal present, dark purplish brown above with 11 small, dark red, dark-edged rhomboidal spots along back, ventral surface rose red Palawan O twahigensis Griffin (p 149)
a^2 Scales in 15 rows, anal divided, dark gray above, with a series of small white spots with black edges on back, orange beneath Busuanga O schadenbergi Boettger (p 151)

All of these species are small and appear to be very rare, as only one or two specimens of each have been collected

OLIGODON MODESTUS Gunther

PLATE 13, FIGS 3 TO 5

Oligodon modestus GUNTHER, Rept Brit India (1864) 210, Proc Zool Soc London (1879) 77, BOETTGER, Ber Senck Nat Ges (1886) 106, BOULENGER, Cat Snakes Brit Mus 2 (1894) 238, pl 10, fig 8, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 426, GRIFFIN, Philip Journ Sci § D 6 (1911) 260, TAYLOR, Philip Journ Sci § D 12 (1917) 359

Description of species —(From Boulenger) "Nasal divided; portion of rostral seen from above as long as its distance from the frontal; suture between the internasals a little shorter than that between the præfrontals; frontal longer than its distance from the end of the snout, as long as the parietals, no loreal, one præ- and one postocular; temporals 1 + 2 or 1 + 3; six upper labials, third largest and entering the eye, three or four lower labials in contact with the anterior chin-shields, which are longer than the posterior. Scales in 15 rows Ventrals 158–170, anal entire; subcaudals 41 Dark brown above, with a yellowish vertebral streak; a yellowish chevron-shaped band on the occiput; lower parts yellowish, with quadrangular black spots"

Measurements of Oligodon modestus Gunther

	mm
Total length	350
Snout to vent	295
Tail	55

* Casto de Elera lists *O sublineatus* Gunther as occurring in Samar This is probably erroneous

Remarks.—The type, collected by H. Cuming, is reported from "Philippine Islands;" the exact locality is no longer known. A specimen is recorded from southern Negros, taken by A. Everett. Both these specimens are males. I failed to find this species in my collecting in central and northern Negros, if it occurs there, it is probably very rare.

OLIGODON NOTOSPILUS Gunther

PLATE 7, FIG. 2, PLATE 17, FIGS. 3 TO 5, PLATE 18, FIG. 1

Oligodon notospilus GUNTHER, Proc. Zool. Soc. London (1873) 169, pl. 18, fig. A; BOETTGER, Ber. Senck. Nat. Ges. (1886) 106; BOULENGER, Cat. Snakes Brit. Mus.² 2 (1894) 229; CASTO DE ELERA, Cat. Fauna Filipinas 1 (1895) 426; GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 260.

Description of species.—(From No. 242, E. H. Taylor collection, collected at Balabac, 1916, by C. M. Weber.) (Adult female.) Head not or but slightly distinct from neck, with snout moderately blunt, rostral high, bent over snout, portion visible above shorter than its distance from frontal; internasals four-sided, narrowed medially, the sutures with prefrontals and nasals largest, the suture with the latter slightly smaller than that with the former but much larger than the sutures with rostral, prefrontals about twice as large as internasals, extending laterally to below level of middle of eye; suture between prefrontals little larger than that between internasals, sutures formed with frontal and internasals largest, subequal; frontal distinctly longer than its distance from end of snout, a little longer than wide, two to two and a half times as wide as supraocular, but little shorter than parietals, latter about as broad as long, narrowly separated from fifth labial, bordered by 2 temporals and a postparietal scale larger than body scales, nasal apparently divided, loreal small, distinctly longer than wide, a single preocular larger than loreal, supraocular elongate, about twice as long as wide, more than half the length of frontal, rather large postocular, temporals 1 + 2, set diagonally, 7 upper labials, third and fourth entering eye; 8 lower labials, 4 touching first pair of chin shields, which are larger than second pair, scales in 15 rows; ventrals, 139; anal single, subcaudals, 35.

Color in alcohol.—Dark purplish brown above with numerous yellow spots, suggesting a reticulated pattern, and a series of eighteen median, rhomboidal, yellowish brown spots with blackish edges; head yellowish brown with two chevron-shaped dark bands, the anterior including the eyes, the second band

rises from fourth ventral, passes across angle of jaw, and ends in a point on frontal; behind this is a similar chevron-shaped band of yellowish brown reaching frontal, a few irregular blotches on labials and throat; belly yellowish

Measurements of Oligodon notospilus Gunther

	mm
Total length	345
Snout to vent	292
Tail	53
Width of head	10
Length of head	13

Remarks.—This species has been known only from the type since its discovery about 1870 in Mindanao. The specimen here described agrees remarkably well with the type description. In coloration and markings it is identical with the description and the plate. The variation in the ventral count is only four; the subcaudal count is identical. In the specimen at hand the subcaudals are all divided, and there are four instead of three lower labials touching the first pair of chin shields.

OLIGODON IWAHIGENSIS Griffin

PLATE 18, FIG. 2

Oligodon iwahigensis GRIFFIN, Philip. Journ. Sci. § A, 4 (1909) 395, § D, 6 (1911) 260.

Description of species.—(From the type specimen, No. R. 16, Bureau of Science collection; collected at Iwahig, Palawan, by W. Schultze.) Maxillary teeth 6, 2 teeth on each palatine; head not or scarcely distinct from neck, much narrowed on snout, rostral about as high as wide, well visible from above, pointed behind; sutures with anterior nasal largest, the portion of rostral seen from above shorter than its distance from snout, internasals about half as large as prefrontals, their shortest sides joining, the suture between them equal or nearly equal to that between prefrontals, latter wider than deep, the suture with frontal largest, that with loreal smallest, frontal but little longer than wide, almost a regular hexagon, more than twice as wide as supraoculars and longer, its length greater than its distance from end of snout, parietals longer than frontal, in contact with 1 postocular, much narrowed behind, nostril between 2 nasals, the anterior largest, both touching first labial, loreal small, little more than half the size of preocular, 1 preocular, higher than wide, 2 postoculars, the upper largest, temporals $1+\frac{1}{2}$, the anterior in contact with the 2 postoculars, 7 upper labials, third and fourth entering

eye, sixth largest, first smallest; 7 lower labials, first 4 in contact with anterior chin shields, which are much larger than second pair, mental wider than deep, sepa ated from first pair of chin shields, scales smooth, rounded, in 15 rows, no apical pits evident, 139 ventrals; subcaudals, 36, anal entire, tail ending in a sharp point, slender

Color.—Dark purplish brown above with eleven small, light brown, rhomboidal spots along back, lateral scales finely flecked with white dots, occasional, larger white spots present, upper surface of head gray-brown, with a chevron-shaped, brown band passing through eyes, rather dim between eyes; a second chevron-shaped, dark-brown band on neck, its point nearly confluent with middle of first band, behind this a similar stripe of lighter brown, wider on side than medially; a dark spot on sixth upper labial and another on fourth and fifth lower labials; two distinct spots on anterior chin shields, chin with various small spots; throat with a large blotch confluent with the chevron-shaped neck band, remainder of ventral surface uniform coral red (cream color in alcohol) The body coloration extends slightly on the ventral scales

Measurements of Oligodon iwahigensis Griffin

	mm
Total length	324
Snout to vent	267
Tail	57
Width of head	8 5
Length of head	12 5

Variation.—No variation in scalation is observable save that in No R 923 the anal is divided Both specimens have a small scale inserted between the last ventral and the anal The coloration and marking are the same

Remarks.—I am not yet fully convinced as to the distinctness of this species from *O schadenbergi.* The latter species is described as follows. "Anal divided—dark gray above with white black-edged spots,—orange below," whereas the present species has the anal entire and is purplish brown above with small, red, black-edged spots, and rose below However the color of the type of *O iwahigensis* easily fits the color scheme of *O schadenbergi* since it has been preserved in alcohol The anal character would separate them, were it constant; but the fact that, of the two specimens of *O iwahigensis* examined, one has the anal single and the other double, leads me to suspect that the two forms may be the same, and that one or the other

of the types is anomalous with respect to that character This question will not be satisfactorily settled until the types, or a series of specimens from both type localities, can be compared From *O notospilus* it differs in coloration and markings, the former having eighteen instead of eleven spots

TABLE 27.—*Measurements and scale counts of Oligodon iwahigensis Griffin*

No	Locality	Collector	Length	Tail
			mm	mm
R 16 type	Iwahig, Palawan	W Schultze	324	57
R 923, type	do	C H Lamb	330	60

No	Ventrals	Subcaudals	Anals	Scale rows	Postoculars	Collection
R 16 type	139	38	1	15	2	Bureau of Science
R 923 type	142	39	2	15	2	Do

OLIGODON SCHADENBERGI Boettger

Oligodon schadenbergi BOETTGER, Abh Mus Dresden 7 (1894–95) 4, GRIFFIN, Philip Journ Sci § D 6 (1911) 260

Description of species.—(After the type description) From *Oligodon vertebralis* Gunther, of South Borneo, it is distinguished by a shorter, blunter head, by a frontal two and a half to three times as wide as the supraocular, by a smaller loreal, and by the internasal suture which is distinctly shorter than the prefrontal suture, the ventral counts are smaller (145–147 as against 154) and the subcaudals are fewer (39 as against 54) Head short, snout blunt, nasal large, divided; part of rostral visible above about as long as prefrontal suture, internasal suture considerably shorter than prefrontal suture, frontal somewhat longer than its distance from end of snout, somewhat shorter than parietals, broadly hexangular, at least two and a half times wider than supraocular; a small trapezoidal loreal, 1 preocular, and 2 postoculars, 7 upper labials, third and fourth entering eye, 4 lower labials touching first chin shields, which are almost twice the length of second, scales in 15 rows, ventrals, 145 to 147; anal divided, subcaudals, 38 or 39

Color.—Above dark gray strongly contrasted with the orange-colored underside; marked as *Oligodon bitorquatus* Boie, with very small, black-edged spots in a netlike pattern, head yellowish brown with two broad crossbands (as in *O vertebralis* Gunther),

a spot under nostril, edges of lower jaw and throat with larger blotches of darker, under tail brick red, sometimes with a median series of larger, white, black-edged dots

Remarks.—The types consist of two adults and a half-grown specimen from Busuanga. I failed to obtain specimens of this rare snake during my recent visit to Busuanga. Only the types are known.

Genus GONYOSOMA Wagler

Gonyosoma Wagler, Icon. Amph. (1828) Nat. Syst. Amph. (1830) 181, Duméril and Bibron, Erp. Gen. 7 (1854) 213, Gunther, Cat. Col. Snakes (1858) 122; Rept. Brit. India (1864) 293; Boettger, Ber. Senck. Nat. Ges. (1886) 110, Casto de Elera, Cat. Fauna Filipinas 1 (1895) 422.

Coluber, part, Boie, Isis (1827) 537, Boulenger, Fauna Brit. India, Rept. (1890) 330, Sclater, Journ. As. Soc. Bengal 60 (1891) 239, Boulenger, Cat. Snakes Brit. Mus. 2 (1894) 21.

Herpetodryas, part, Schlegel, Phys. Serp. 2 (1837) 189, Cantor, Cat. Mal. Rept. (1847) 80.

Tyria Fitzinger, Neue Class. Rept. (1843) 60.

Body compressed, ventrals more than 200, slightly keeled, turning up on sides, snout subacuminate, teeth smooth, equal in length, 1 preocular, 2 postoculars, eye small, pupil round, head shields regular, head slender, distinct from neck, scales smooth or feebly keeled, scales in 23 to 27 rows, tail long; subcaudals double.

The genus is not a large one and has frequently been regarded as belonging to the genus *Elaphe*. This association however is not warranted. One species,* *Gonyosoma oxycephalum* (Boie), enters the Philippines. The snakes of this species are arboreal in habit and feed largely on small mammals and birds. Gunther † states that they are of fierce disposition, and that in order to strike, they raise the anterior third of the body from the ground. They are harmless to man.

GONYOSOMA OXYCEPHALUM (Boie)

Coluber oxycephalus Boie, Isis (1827), Boulenger, Fauna Brit. India Rept. (1890) 335, Sclater, Journ. As. Soc. Bengal 60 (1891) 239, Boulenger, Cat. Snakes Brit. Mus. 2 (1894) 56.

Gonyosoma viride Wagler, Icon. Amph. (1828) pl. 9.

Herpetodryas oxycephalus Schlegel, Phys. Serp. 2 (1837) 189, pl. 7, figs. 8 and 9, Abbild. (1841) pl. 44, figs. 1–9, Cantor, Cat. Mal. Rept. (1847) 80.

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* Casto de Elera's record of *Gonyosoma frenatum* Gray is very probably erroneous, as that species is confined to India.

† Rept. Brit. India (1861) 294.

Alopecophis chalybeus GRAY, Ann & Mag Nat Hist II 4 (1849) 247

Gonyosoma oxycephalum DUMÉRIL and BIBRON, Erp Gen 7 (1854) 213, GUNTHER, Cat Col Snakes (1858) 122, Rept Brit India (1864) 294, PETERS, Mon Berl Ak (1861) 688, JAN, Icon Gén (1869) 31, pl 1, STOLICZKA, Journ As Soc Bengal 39 (1870), 193, 42 (1873) 123, THEOBALD, Cat Rept Brit India (1876) 189, BOETTGER, Ber Senck Nat Ges (1886) 110, CASTO DE ELERA Cat Fauna Filipinas 1 (1895) 432, BARBOUR, Mem Mus Comp Zool Harvard Coll 44 (1912) 116, TAYLOR, Philip Journ Sci § D 12 (1917) 359

Elaphe oxycephala GRIFFIN, Philip Journ Sci § A 4 (1909) 597, § D 6 (1911) 260

Description of species.—(From No 231, Bureau of Science collection, collected at Iwahig, Palawan, October, 1910, by C. H Lamb.) Body slender, elongate, compressed; tail elongate, slender, head narrow, subacuminate, slightly distinct from neck; rostral about one-third broader than high, visible above, its suture with nasal nearly double that with internasals or first labials, internasals as wide as deep, their mutual suture equal to that with prefrontals, a little longer than wide, five-sided, bending low on side of head, broadly in contact with loreal and preocular, frontal large, equal to its distance from rostral, about one-eighth longer than wide, in contact with preocular, much longer and wider than supraoculars; parietals longer than wide, larger than frontal, bending down on sides of head, touching only upper postoculars, nasal divided, the anterior part largest, loreal nearly three times as long as wide, touching 3 labials, preocular three times the size of loreal, touching 3 labials and frontal, 2 postoculars, the superior more than twice as large as the inferior, 2 anterior temporals, the lower barely in contact with lower preocular, the upper touching both; temporal formula, 2 + 3 + 3; 9 upper labials, anterior ones higher than wide, sixth and seventh entering orbit, ninth and eighth largest, 13 lower labials, 5 pairs in contact with anterior chin shields, which are about three times as large as posterior, eye small, its diameter contained in length of snout about three times; 30 scale rows on neck, 25 rows around body, smooth anteriorly but more or less distinctly keeled on latter half of body; scales sharp-pointed posteriorly, the median row not enlarged, the outer slightly so, ventrals, 246, anal divided; subcaudals, 133, in double rows, ventrals and subcaudals slightly keeled, the edges bending up on sides, slightly notched at bend.

Color in life.—Above bright yellowish to whitish green, growing more yellowish green on sides, anterior part of scales, and skin between scales, tinged with bluish slate or cream yellow, skin, when distended, shows dim diagonal bars of darker and lighter color, head olive, labials greenish, tail yellowish drab to flesh color, anterior part of scales with dim dark edge, below more yellowish than on sides, inner sutures of subcaudals edged with darker, chin, throat, and belly cream yellow, outer edges of ventrals greenish

Measurements of Gonyosoma oxycephalum (Boie)

	mm
Total length	1,965
Snout to vent	1,480
Tail	485
Length of head	52
Width of head	27

Variation.—Philippine specimens examined have the following variations in scale counts Ventrals, 240 to 253, subcaudals, 122 to 135, upper labials, 8 to 11, and lower labials, 12 to 15 One specimen (No 415, Bureau of Science collection) has the right internasal and the two right nasals fused into a single scale No 327 (E H Taylor collection) has the head blackish with a longitudinal dark line on side of head, and with much dark color on body scales

Boulenger[1] gives the variation in scale counts as follows Ventrals, 233 to 263, subcaudals, 122 to 149, 9 to 11 upper labials, 2, rarely 3, entering eye, scales in 23 to 27 rows around body His specimen "g" from the Philippines (exact locality unknown) has 27 scale rows The largest specimen he lists measures 2,300 millimeters in length, the tail, 480

Remarks.—This large arboreal snake probably attains a length of 2 5 meters It is not rare in the Philippines, but is confined largely to forested or mountainous districts Specimens I have observed in a wild state were usually coiled about branches of trees One young specimen captured was coiled under a small fallen log. In the Philippines it has been taken in Luzon (several localities), Palawan, Balabac, and Negros. It probably occurs in all of the larger islands It is also known from Tenasserim, Malay Peninsula, Java, Borneo, and the Natuna Islands The snake is not poisonous

[1] Cat Snakes Brit Mus 2 (1894) 57

TABLE 28.—*Measurements and scale counts of Gonyosoma oxycephalum (Boie)*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals	Subcaudals
				mm	mm		
229	Iwahig Palawan	C M Weber	♂	1436	325	253	127
230	do	C H Lamb	♀	1510	460	246	133
231	do	do	♀	1965	485	246	133
415	do	C M Weber	♂	1590	375	240	135
827	Balabac	do	♂	1155	360	247	122
1100	Los Baños Laguna	E H Taylor	yg	450	80	245	(a)

No	Anals	Labials				Scale rows		Collection
		Upper	Lower	Enter eye	Touch chin shields	Neck	Body	
229	2	9	14	6,7	6	31	25	Bureau of Science
230	2	10 11	14	6,7	6	31	25	Do
231	2	9	13	6,7	6	30	25	Do
415	2	9	15	6 7	6	29	25	Do
827	2	9	14	6 7	6	29	25	E H Taylor
1100	2	8-9	12	5 6	6	29	25	Do

(a) Mutilated

Genus ELAPHE Fitzinger

Coluber BOIE, Isis (1826) 209; GUNTHER, Rept Brit India (1864) 287; BOULENGER, Cat Snakes Brit Mus 2 (1894) 24

Elaphe FITZINGER, in Wagler's Descr et Icon Amphib 3 (1833) pl 27, STEJNEGER, Bull U S Nat. Mus 58 (1907) 307

Plagiodon DUMÉRIL and BIBRON, Mem Ac Sci 23 (1853) 417, Erp Gen 7 (1854) 170

Elaphis BONAPARTE, Mem Acad Sci Torino II 2 (1840) 402

Composoma (non Serv) DUMÉRIL and BIBRON, Mem Ac Sci 23 (1853) 453; Erp Gén 7 (1854) 291, GUNTHER, Rept Brit India (1864) 248

The name *Elaphe* must stand for this genus as is shown by Stejneger; and *Coluber*,* the usually accepted name, must be used for the genus of poisonous vipers, usually known as *Vipera*

Two fairly well-defined species of this genus are found in the Philippines.

Key to the Philippine species of Elaphe Fitzinger

a^1 Ventrals, 216 to 233; subcaudals, 87 to 100, markings on head and neck wanting or indistinct; young, with narrow dim whitish transverse white bars. *E erythrura* (Duméril and Bibron) (p 156).

a^2 Ventrals, 228 to 238, subcaudals, 103 to 110, markings on head and neck distinct, young, brown with black transverse bars inclosing light spots *E philippina* Griffin (p 159)

* Bull U S Nat Mus 58 (1907) 443

ELAPHE ERYTHRURA (Duméril and Bibron)

Plagiodon erythrurus DUMÉRIL and BIBRON, Erp Gen 7 (1854) 175, PETERS, Mon Berl Ak (1861) 684, JAN, Elenco Sist Ofid. Milan (1863) 61, Icon Gen (1867) 21, pl 4, fig 2, STEINDACHNER, Sitzb Ak Wien c 1 (1891) 141

Coluber melanurus var DUMÉRIL and BIBRON, Erp Gen 7 (1854) 301, GUNTHER, Proc Zool Soc London (1873) 169, MULLER, Ill Nacht Cat Herp Samml Basel Mus (1883) 14 (var), FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 80 and 101 var

Elaphis subradiatus, part, GUNTHER, Cat Col Snakes (1858) 95

Spilotes melanurus, part, GUNTHER, Cat Col Snakes (1858) 97

Elaphis melanurus var *manillensis* JAN, Icon Gen 21 (1867) pl 1 fig 2

Elaphis melanurus var *celebensis* JAN Icon Gen 21 (1867) pl 5, fig 2

Coluber melanurus var *erythrurus* FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 101, BOETTGER Ber Senck Nat Ges (1886) 108 (var *erythrura*)

Elaphe erythrura GRIFFIN, Philip Journ Sci § D 5 (1910) 213, § D 6 (1911) 260, TAYLOR, Philip Journ Sci § D 12 (1917) 359

Description of species.—(From No 69. E. H. Taylor collection, collected at Bunawan, Agusan, Mindanao July 15, 1913, by E. H. Taylor.) (Adult male.) Rostral higher than wide, visible above, forming its longest suture with anterior nasal, its sutures with prefrontals and labials subequal, suture between internasals short, less than length of internasal scale, and contained in prefrontal suture two and a half times; internasal broader than long, bordering edge of nostril; prefrontals more than twice as long as internasals, the suture formed with the latter and that with frontal subequal, its shortest suture with posterior nasal, frontal longer than broad, its length equal to its distance from end of snout, much wider than supraoculars; parietals narrow, longer than frontal, 2 nasals, posterior highest, loreal diagonal, longer than high, prefrontal very large, visible from above, separated from frontal, in contact with third and fourth labials, 2 postoculars, upper largest, temporals 2 + 2, 9 upper labials, fourth, fifth, and sixth entering eye, 11 lower labials, 5 touching anterior chin shields, which are shorter and broader than posterior; scales in 23 rows about neck, 21 rows about body, all except outer row keeled; ventrals, 221, anal single, subcaudals, 100

Color in life.—Anterior half of body drab to brownish olive above, lighter on sides, two indistinct yellowish bands on neck and a series of small indistinct spots along edge of ventrals of neck, top of head dark olive; latter part of body dark with an irregular mixture of reddish scales; tail reddish salmon

The transitions in color are gradual Anterior half of belly immaculate brown-yellow, edges of ventrals having the lateral body color; ventrals on latter part of belly spotted irregularly with dark gray to black; tail immaculate below

Measurements of Elaphe erythrura (Duméril and Bibron)

	mm
Total length	1,080
Snout to vent	815
Tail	265
Length of head	80
Width of head	17 5

Variation.—Three other specimens from the same immediate locality as the one described agree very well in scalation, the ventrals range between 217 and 225, the subcaudals, from 96 to 100; there are 6 lower labials touching the anterior chin shields There is some inconsequent variation of the dorsal coloration

Negros specimens are very different from the described specimen in coloration; the entire posterior part of the body is dark bluish black, and the ventrals of the posterior part of the body and the subcaudals are grayish black The scale formulæ are practically identical with those of the Luzon and Mindanao forms, otherwise they would merit subspecific distinction The young of Negros specimens are dark brown anteriorly with narrow, transverse, lighter areas on the skin between the scales, along the middle part of the body the light color forms a network, the tail is black, and the outer side of the posterior part of the body is drab

Specimens from Luzon are uniform brown to reddish olive, the edges of the scales usually slightly darker, and the tail usually a lighter reddish brown, below the belly is immaculate yellowish, young Luzon specimens are a uniform brown, or are traversed by numerous very narrow, dim, whitish bars, the white being chiefly confined to the skin between the scales Sometimes a dim dark spot is visible below, and another behind the eye; the inside of the throat is black

One Polillo specimen resembles the specimens from Negros in having the posterior part of the body dark.

Remarks.—This common species is abundant wherever found It is known from Mindanao, Luzon, Negros, Polillo, and Mindoro. Boulenger * and Griffin report the species from Palawan, but I regard this as doubtful. The species is also known from

* Boulenger's record, Ann & Mag Nat Hist VI 14 (1894) 82, very probably refers to *E philippina* Griffin

Celebes The species feeds on mammals and birds and is harmless to man

TABLE 29.—*Measurements and scale counts of Elaphe erythrura (Duméril and Bibron)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals
				mm	mm		
276	Dumaguete Occidental Negros	Eskridge	♀	1 560	333	226	97
277	Cadiz Occidental Negros	A Celestino	♂	1 295	298	222	97
278	Victorias Occidental Negros	H M Curran	♀	1 490	320	226	96
279	Pulilio	C Canonizado	♀	1 410	290	231	a 86
175	Occidental Negros	E H Taylor	♀	1 330	282	224	a 98
178	do	do	♂	1, 110	290	215	(b)
179	do	do	♂	1 340	316	216	99
282	Manila	L D Griffin	♂	1 400	(b)	210	a 92
284	do	do		1 160	255	222	92
285	do	do	♂	1 170	305	215	a 88
286	do	E H Taylor	♀	1 255	280	225	90
287	do	do	♂	1 310	(b)	218	a 88
288	do	do	♂	1 500	340	221	94
289	Hugao, Luzon	H O Beyer		1 480	300	218	89
66	Bunawan Agusan	E H Taylor	♂	1 222	270	225	97
67	do	do	♂	1 340	(b)	222	(b)
68	do	do	♂	1 370	310	217	96
69	do	do	♂	1 180	266	221	100

No	Scale rows: Neck	Body	Enter eye	Labials: Upper	Lower	Touch chin shields	Temporals	Collection
276	23	21	4 5 6	9	10	5	2+2	Bureau of Science
277	25	21	4 5 6	9	11	6	2 2	Do
278	23	21	4 5 6	9	11	6	2 2	Do
279	23	21	4 5 6	9	11-12	6-5	2+2	Do
175	23	21	4 5, 6	9	11-10	5	2 2	E H Taylor
178	23	21	4 5 6	9	11	6	2+2	Do
179	23	21	4 5 6	9	11	6	2+2	Do
282	23	21	4, 5, 6	9	10	5	2+2	Bureau of Science
284	25	21	4 5 6	9	11	5	2+2	Do
285	23	21	4 5, 6	9	11	6	2+2	Do
286	23	21	4 5, 6	9	11	5	2+2	Do
287	23	21	4 5 6	9	11	6	2+2	Do
288	23	21	4 5 6	9	11	6	2+2	Do
289	23	21	4 5 6	9 b	11	5	2+2	Do
66	23	21	4 5, 6	9	11	6	2+2	E H Taylor
67	23	21	4 5 6	9	11	6	2 2	Do
68	23	21	4 5 6	9	10 11	6	2+2	Do
69	23	21	4 5 6	9	11	6	2+2	Do

a Tip of tail missing b Mutilated

ELAPHE PHILIPPINA Griffin

Elaphe philippina GRIFFIN, Philip Journ Sci § A 4 (1909) 597. § D 6 (1911) 260
Elaphe erythrura TAYLOR, Philip Journ Sci § D 13 (1918) 260.

Description of species [3]—(From No. 291, Bureau of Science collection; collected at Iwahig, Palawan, February, 1909, by C. M. Weber.) Head elongate, rather slender, rostral strongly visible above; internasals a little broader than deep, bordering nostril above, forming a longer suture with anterior nasal than with posterior; prefrontals nearly three times the size of internasals, in contact with supraoculars, frontal longer than wide, scarcely as long as its distance from end of snout, as long as supraoculars, distinctly shorter than parietals, parietals much longer than broad, in contact with 2 temporals and both postoculars; 2 nasals; loreal as long as high; a single large preocular; 2 postoculars; temporals 2 + 2, the 2 anterior in contact with sixth labial, neither touching superior postocular, and only upper anterior temporal touching inferior postocular, 9 upper labials, fourth, fifth, and sixth entering orbit, seventh, eighth, and ninth largest, 11 lower labials, 5 touching anterior chin shields, which are broader but shorter than posterior pair; latter pair barely in contact anteriorly, bordering labials their entire length; scales forming straight longitudinal rows, the 8 median rows keeled on anterior part of body, about 12 keeled rows on posterior part of body, scales with apical pits in 23 rows around neck, and 21 on body, scales on body rounded anteriorly and pointed behind; ventrals obtusely keeled laterally, not notched, 236, anal undivided, subcaudals divided, 104 †

Color in alcohol—Above brown with the larger part of the scales dimly dark edged, and light areas on skin between scales; anterior part of body and neck with black crossbars, inclosing yellowish spots laterally, these become dimmer posteriorly; about twelve can be distinguished. Head brown above; upper labials yellowish; a black spot below eye; a distinct diagonal black line from eye to mouth, reaching ninth labial, a distinct diagonal stripe from posterior temporals across angle of jaws to ventrals, reaching tenth ventral, belly and underside of tail yellowish, the vertical part of ventrals gray

[3] Griffin had five specimens before him, no particular one of which was designated as the type. The specimen here described is No. 17 of the type series.

† Griffin gives 94, which is incorrect.

Measurements of Elaphe philippina Griffin

	mm
Total length	1,420
Snout to vent	1,113
Tail	307
Length of head	32
Width of head	16

Variation.—The young differ from the adults in the distinctness of the markings, more than 20 transverse bands are evident, but they do not extend as far back as the tail; posterior fourth of body and the tail uniform brown. The ventrals range between 223 and 242, subcaudals, between 103 and 110.

TABLE 30.—*Measurements and scale counts of Elaphe philippina Griffin.*

No.	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals
				mm	mm		
5114	Balabac	C. M. Weber	♂	1,385	300	236	103
5115	do	do	♀	1,465	315	238	105
290	Iwahig, Palawan	do	♀	1,410	320	232	107
291	do	do	♀	1,420	307	236	104
292	do	do	♀	1,360	310	234	110
293	do	do		1,290	295	236	105
294	Taytay, Palawan	L. L. Griffin	♂	1,280	(a)	230	(a)
295	Iwahig, Palawan	C. H. Lamb	♂	1,195	(a)	238	(a)
297	do	do	♂	1,225	276	242	106
298	do	do	♂	1,160	265	238	107
	Borneo	E. H. Taylor	♂	1,360	340	223	107
	do	do	♂	720	(a)	236	(a)

No.	Scale rows: Neck	Body	Enter eye	Labials: Upper	Lower	Touch chin shields	Temporals	Collection
5114	23	21	4,5,6	9	11	5	2+2	E. H. Taylor
5115	23	21	4,5,6	9	11	6-5	2+2	Do
290	23	21	4,5,6	9	11	6	2+2	Bureau of Science
291	23	21	4,5,6	9	11	5	2+2	Do
292	23	21	4,5,6	9	11	5	2+2	Do
293	23	21	4,5,6	9	11	5	2+2	Do
294	23	21	4,5,6	9	11	5	2+2	Do
295	23	21	4,5,6	9	11	5	2+2	Do
297	23	21	4,5,6	9	11	5	2+2	Do
298	23	21	4,5,6	9	11	5	2+2	Do
	23	21	4,5,6	9	11	5	2+2	Do
	23	21	4,5,6	9	11 12	5-6	2+2	Do

(a) Mutilated

Remarks.—The species differs from *Elaphe erythrura* Duméril and Bibron in a higher average of ventrals and subcaudals, the average for *E. philippina* is about 235 for ventrals, and 106 for subcaudals, while in *E. erythrura* ventrals average 221 and subcuadals 93. The markings are distinctive, as shown by Griffin; the head is slenderer in *E philippina* The types are from Palawan Specimens have since been taken in Busuanga, Balabac, and Bongao The species feeds largely on birds and small mammals. It probably never eats reptiles or amphibians It is absolutely harmless to man.

Genus LIOPELTIS Fitzinger

Coronella, part, SCHLEGEL, Phys Serp 2 (1837) 50
Herpetodryas, part, SCHLEGEL, Phys Serp 2 (1837) 173
Liopeltis FITZINGER, Syst Rept (1843) 26, STEJNEGER, Bull U S Nat Mus 58 (1907) 337
Ablabes, part, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 304, GUNTHER, Cat Col Snakes (1858) 27, Rept Brit India (1864) 223
Cyclophis, part, GUNTHER, Cat Col Snakes (1858) 119; Rept Brit India (1864) 229
Eurypholis HALLOWELL, Proc Acad Nat. Sci Philadelphia (1860) 498 and 559, JAN, Elenco Sist Ofid (1863) 81
Phragmitophis GUNTHER, Ann. & Mag Nat Hist III 9 (1862) 126
Homalosoma, part, JAN, Arch Zool Anat Phys 2 (1862) 33
Liopeltis, part, COPE, Proc Acad. Nat Sci Philadelphia (1860) 559, JAN, Elenco Sist Ofid (1863) 81
Diadophis, part, JAN, Elenco Sist Ofid (1863) 261
Ablabes BOULENGER, Fauna Brit India, Rept (1890) 304, Cat Snakes Brit Mus 2 (1894) 277
Entacanthus COPE, Rep U S Nat Mus (1898) 780

"Maxillary teeth small, equal, 15 to 30; mandibular teeth subequal. Head not or scarcely distinct from neck, eye rather small or moderate, with round pupil, loreal present or absent, nasal entire or divided Body cylindrical, usually slender; scales smooth or feebly keeled, without apical pits, in 13 to 17 rows; ventrals not angulate * laterally Tail moderate or long, subcaudals in two rows" (From Boulenger's description of *Ablabes*)

The snakes belonging to this genus are distributed over southern and eastern Asia, Japan, Malay Peninsula, and the East Indies Two species enter the Philippines One is the widely distributed *Liopeltis tricolor* (Schlegel), the other, *Liopeltis philippinus* (Boettger), is probably endemic

* Slightly angulate in certain species.—E H T

The snakes are small, probably neither species attaining a length of more than two-thirds of a meter. They are probably arboreal in habit. Both species appear to be rare in the Philippines. They are absolutely harmless and are very gentle when handled

Key to the Philippine species of Liopeltis Fitzinger

a' Nostril between nasal and internasal, which are completely fused in front of nostril, light brown above with four dark brown longitudinal lines, yellowish below . . . . . L. philippinus (Boettger) (p 164)

a' Nostril in single nasal, completely separated from internasal; olive to light brown above, a black streak behind eye, and a light stripe on outer row of scales . . . . . L tricolor (Schlegel) (p 162)

LIOPELTIS TRICOLOR (Schlegel)

PLATE 11, FIGS. 3 TO 5, PLATE 19

Herpetodryas tricolor SCHLEGEL, Phys Serp 2 (1837) 187, pl 6, figs 16–18

Cyclophis tricolor GUNTHER, Cat Col Snakes (1858) 121, Proc Zool Soc London (1872) 590, STOLICZKA, Journ As Soc Bengal 42 (1873) 122

Liopeltis tricolor COPE, Proc Acad Nat Sci Philadelphia (1860) 559, JAN, Icon Gén (1869) 31, pl 6, fig 2

Ablabes tricolor BOULENGER, Cat Snakes Brit Mus 2 (1894) 281, GRIFFIN, Philip Journ Sci § A 4 (1909) 599, § D 6 (1911) 261, TAYLOR, Philip Journ Sci § D 13 (1918) 260

Description of species.—(From No 709, Bureau of Science collection; collected at Iwahig, Palawan, March, 1909, by W Schultze.) (Adult male) Head elongate, depressed, its height less than three times diameter of eye; rostral broader than deep, small, well visible above, the suture with nasal largest, sutures with internasals and with first labials coequal; internasals rather triangular, pointed anteriorly, longest along their mutual suture, which is about equal to that between prefrontals, not as long as that with nasals; prefrontals rather large, broader than deep, in contact with 1 or 2 labials, nasal, and preocular, their median suture rather diagonal, leaving left prefrontal, forming a considerable suture with right internasal, frontal elongate, scarcely, if any broader than supraocular, twice as long as wide, slightly longer than its distance to end of snout; parietals elongate, not twice as long as wide, in contact with 2 postoculars; nasal elongate, single, separating internasals from labials, nostril pierced in posterior part, no loreal; a single small preocular, supraoculars twice as long as wide, 2 postoculars, coequal, and nearly equal in size to preocular, temporals 1+2, large, elongate, both upper temporals bordering parietals their entire length; 8

upper labials, seventh largest, fourth and fifth entering eye; 8 lower labials, 4 touching anterior chin shields which are slightly longer than, but almost equal in size to, posterior; scales in 15 rows, smooth, without apical pits, ventrals, 149, slightly angulate laterally; subcaudals, 116, anal divided

Color in life.—Grayish to olive brown above, anterior third of body and head rather more olive; a black streak begins on rostral, passes through eye and continues along neck and sides some distance, growing gradually indistinct: tail above a light reddish to pinkish brown; a pale yellowish to lavender olive streak along outer row of scales and edges of ventral, chin and belly immaculate creamy white.

Measurements of Liopeltis tricolor (Schlegel)

	mm
Total length	502
Snout to vent	324
Tail	178
Width of head	9
Length of head	18

TABLE 31.—*Measurements and scale counts of Liopeltis tricolor (Schlegel)*

No	Locality	Collector	Sex	Length	Tail	Ventrals
				mm	mm	
709	Iwahig Palawan	W Schultze	♂	502	178	149
723	....do	C M Weber	♀	486	165	148
1171	Taytay Palawan	L E Griffin		467	181	145
666	Bubuan, Sulu	E H Taylor				137

No	Subcaudals	Anals	Preoculars	Postoculars	Temporals	Labials enter eye	Scale rows	Collection
709	116	2	1	2	1+2	4, 5	15	Bureau of Science
723	124	2	1	2	1+2	4 5	15	Do
1171	124	2	1	2	1+2	4, 5	15	Do
666	*103	2	1	2	1+2	4, 5	15	Do

* Mutilated

Variation.—Practically no variation of moment is evident in the Philippine specimens; the ventrals vary from 137 to 149, the subcaudals, from 116 to 124. A fourth, badly mutilated specimen in my collection was taken from the stomach of a *Boiga dendrophila* from Palawan. I obtained a specimen of this species on the very small island of Bubuan, Tapian group, Sulu Archipelago, in October, 1917. It was taken in a low tree about 3 meters from the earth; the tip of the tail

is slightly mutilated, only 103 subcaudals showing The ventrals are 137, a lower number than in the Palawan specimens Boulenger * gives the ventral range as 140 to 187, the subcaudal, 103 to 130.

LIOPELTIS PHILIPPINUS (Boettger)

PLATE 20

Ablabes philippinus BOETTGER, Zool Anz 20 (1897) 164, GRIFFIN, Philip Journ Sci § D 6 (1911) 261

Description of species—(From No 940, Bureau of Science collection, collected at Iwahig, Palawan, 1908, by C M. Weber) (Adult male) Head distinctly triangular, rather flattened, quite distinct from neck, rostral almost one and a half times as wide as high, but slightly pointed behind, the suture with nasal is twice that with first labial, internasal fused with nasal to form a single scale, nostril pierced near posterior part, a suture issues from nostril and continues back to suture between nasal and prefrontal, partially dividing scale; the combined scale somewhat smaller than prefrontal, latter much broader than deep, in contact with 2 labials laterally and a small preocular posteriorly (In the specimen here described the prefrontals are fused, with a slight linear depression between them, doubtless an abnormal condition) The posterior sides are rounding; frontal elongate, twice as long as wide, pointed behind, not twice as wide as supraoculars, but longer; parietals elongate, very much longer than wide, much longer than frontal; loreal wanting; preocular small, square, widely separated from frontal; 2 postoculars, upper a little the larger, both in contact with parietal, temporals 1 + 2, very well defined, 8 upper labials, fourth and fifth entering eye, fifth and sixth touching lower postocular; 8 lower labials, 4 in contact with anterior pair of chin shields, which are little more than half the size of posterior pair; mental as wide as deep, triangular; scales in 15 rows, dorsals smallest, laterals largest, rather rounding behind, 140 ventrals; anal divided, subcaudals, 119 Eye less than its distance from nostril, tail extremely slender near end, terminating in a sharp point, apical pits wanting

Color in alcohol—Above grayish yellow to light brown, four longitudinal brown stripes begin on neck and continue along body; two median stripes, one and a half scale rows in width, separated by one whole and two half rows of scales, these stripes continue to end of tail, lateral stripes are separated from dorsal by two whole rows of scales and are only the width

* Catalogue, loc cit

of a half scale row; these continue only to near anus; the light areas between the brown lines laterally are punctate with many small brownish dots; head olive, with an indistinct dark line behind eye, this being the origin of the lateral brown line; labials, chin, and throat immaculate; ventrals with small dots on their outer edges and a few scattered larger dots in a median row along middle part of belly; the lateral punctations on subcaudals form an indistinct line

Measurements of Luopeltis philippinus (Boettger)

	mm
Total length	640
Snout to vent	390
Tail	250
Length of head	20
Width of head	10 5

Variation.—Boettger gives the ventral count as 144 to 146, the subcaudal, as 118

Remarks.—No other specimen of this rare snake is at hand for comparison This one agrees well with the type description Boettger's two types are from Samar and Culion, collected by Moellendorff and Koch With so wide a distribution it is striking that so few specimens have reached collections and that it has remained undiscovered until so late a date

Genus DENDROPHIS Boie

Ahætulla, part, Gray, Ann Phil 10 (1825) 208

Leptophis, part, Bell, Zool Journ 2 (1825) 328, Jan, Elenco Syst Ofid (1863) 84

Dendrophis Boie, Isis (1827) 520, Boettger, Ber Senck Nat Ges. (1886) 111, Boulenger, Fauna Brit India, Rept (1890) 337; Cat Snakes Brit Mus 2 (1894) 77, Casto de Elera, Cat Fauna Filipinas 1 (1895) 123

Dendrophis, part, Wagler, Syst Amph (1830) 182, Schlegel, Phys Serp 2 (1837) 220, Duméril and Bibron, Erp Gen 7 (1854) 193, Gunther, Cat. Col Snakes (1858) 148, Rept Brit India (1864) 296, Jan, Elenco Syst Ofid (1863) 85

"Maxillary teeth 20 to 38, the posterior more or less enlarged, stouter if not longer than the rest; anterior mandibular teeth longest. Head distinct from neck, more or less elongate, eye large, with round pupil Body elongate, more or less compressed; scales smooth, in 13 or 15 rows, narrow, disposed obliquely, with apical pits, those of the vertebral row more or less enlarged; ventrals with a suture-like lateral keel and a notch on each side, corresponding to the keel. Tail long; subcaudals in two rows, keeled and notched like the ventrals" (*Boulenger*.)

Snakes of this genus are distributed over southeastern Asia, Malay Archipelago, to Australia. They are largely arboreal, and are harmless.

Only one species, *Dendrophis pictus* (Gmelin), is known in the Philippines. *Dendrophis punctulata*, an Australian species, has been reported from the Philippines by Gunther * and by Parenti and Picaglia † and is included in Boettger's, ‡ Casto de Elera's, § and Griffin's ‖ lists. Boulenger has referred Gunther's specimen to *Dendrelaphis terrificus* (Peters), and I think without doubt that the specimen reported by Parenti and Picaglia belongs to this species also; or, if correctly identified, that it did not originate in Ticao, Philippines, as stated by Parenti and Picaglia.

DENDROPHIS PICTUS (Gmelin)

Coluber pictus GMELIN, Syst. Natura 1 (1788) 1116.
Coluber decorus SHAW, Zool. 3 (1802) 538.
Dipsas schokari, part, KUHL, Beitr. Zool. Verg. Anat. (1820) 80.
Ahætulla decorus GRAY, Ann. Phil. 10 (1825) 208.
Leptophis ahætulla, part, BELL, Zool. Journ. 2 (1825) 328.
Dendrophis picta BOIE, Isis (1827) 530. STOLICZKA, Journ. As. Soc. Bengal 39 (1870) 193.
Ahætulla belli GRAY, Ill. Ind. Zool. 2 (1834) pl. 80.
Dendrophis pictus, part, SCHLEGEL, Phys. Serp. 2 (1837) 228, pl. 9, figs. 5–7, DUMÉRIL and BIBRON, Erp. Gen. 7 (1854) 197. GIRARD, U. S. Expl. Exp. (1858) 129, GUNTHER, Cat. Col. Snakes (1858) 148, Rept. Brit. India (1864) 297, JAN, Icon. Gen. 32 (1869) pl. 1, fig. 3, THEOBALD, Cat. Rept. Brit. India (1876) 190. BOETTGER, Ber. Senck. Nat. Ges. (1886) 111, BOULENGER, Cat. Snakes Brit. Mus. 2 (1894) 78. CASTO DE ELERA, Cat. Fauna Filipinas 1 (1895) 433, BARBOUR, Mem. Mus. Comp. Zool. Harv. Coll. 44 (1912) 117.
Leptophis pictus CANTOR, Cat. Mal. Rept. (1847) 82.
Ahætulla picta COPE, Proc. Acad. Nat. Sci. Philadelphia (1860) 556.
Leptophis formosus JAN, Icon. Gen. (1879) 49, pl. 6, fig. 2.

Description of species.—(From No. 219, E. H. Taylor collection; collected in Occidental Negros, August 10, 1915, by E. H. Taylor.) Body slender; tail long and slender, somewhat compressed, head elongate, distinct from neck; rostral broader than high, well visible above, internasals longer than wide, their mutual suture about equal to their suture with prefrontal; prefrontals larger than internasals, wider than deep, bending down over sides of head, forming a long suture with loreal, narrowly in

* Cat. Col. Snakes Brit. Mus. (1858) 150.
† Atti Soc. Nat. Modena, Mem. Orig. III 5 (1886) 50.
‡ Ber. Senck. Nat. Ges. (1886) 111.
§ Cat. Fauna Filipinas 1 (1895) 433.
‖ Philip. Journ. Sci. § D 6 (1911) 259.

contact with supraocular (on one side only); frontal nearly triangular, rather narrowly pointed behind, longer and wider than supraocular, equal to its distance to end of snout; parietals rather short, in contact with superior postocular, nasal divided, posterior part largest; an elongate loreal, more than twice as long as high; a large preocular, widest at top, in contact with frontal (on one side); 2 postoculars, lower very small. Temporals 1 + 2, 11 upper labials, fourth (very narrowly), fifth, and sixth entering eye, sixth, seventh, and eighth largest, 9 lower labials, 5 in contact with first pair of chin shields, which are broader but very much shorter than second pair; second pair of chin shields separated posteriorly by 2 scales, a single large scale borders last 5 labials; scales in 15 rows, entirely smooth, with apical pits, median row largest, hexagonal, laterals narrow, elongate, broadly imbricate, outer row large, triangular; ventrals, 180, strongly keeled and notched laterally, subcaudals, 148, keeled and notched; anal divided.

Color in life.—Above yellow-green; a broad dark stripe begins behind eye, dimly indicated on loreal region, and continues some distance on neck, where it is broken in dark bars separated by bluish diagonal bands, the blue color on scales is usually covered by the overlapping scale, and is not much in evidence until the skin is distended, the markings are not or scarcely evident past the middle of body, outer scale row yellowish; ventrals greenish yellow ventrally, greenish laterally, top of head olive; upper labials, chin, and throat yellow

Measurements of Dendrophis pictus (Gmelin)

	mm
Total length	1,145
Snout to vent	748
Tail	397
Length of head	26
Width of head	14

Variation.—In Philippine specimens examined the ventrals vary between 163 and 180; the subcaudals, between 139 and 166, the supralabials, between 8 and 11, and the temporals are 1 + 2 or 2 + 2 The fifth and sixth labials usually enter the eye. Boulenger * gives the range as ventrals, 165 to 190; subcaudals, 122 to 164

Remarks.—This is a common species, widely distributed in the Philippines I have examined specimens from Luzon, Ne-

* Cat Snakes Brit Mus 2 (1894) 79

gros, Panay, Mindoro, Polillo, Palawan, Busuanga, Mindanao, Lapac, and Cagayan Sulu It is also reported from Samar

Outside of the Philippines it occurs over southern Asia, Malay Peninsula, Malay Archipelago to the Moluccas, and New Guinea

These snakes are usually taken in small bushes or trees They are arboreal in habit, and feed on lizards and frogs The species is absolutely harmless. It is confused by many Filipinos with *Dryophis prasinus*, the so-called *dahon palay*, which is regarded by them as deadly poisonous In Negros I have seen this species handled by schoolboys who do not fear it It is there called *manmum*.

TABLE 32.—*Measurements and scale counts of Dendrophis pictus (Gmelin)*

No	Locality	Collector	Age or sex	Length	Tail	Ventrals	Subcaudals
				mm	*mm*		
6	Mindanao	E H Taylor	yg	375	136	171	166
109	do	do	♀	886	302	173	136
404	do	do	♂	920	a315	169	(a)
431	do	do	♂	740	a253	169	(a)
435	do	do	♀	648	230	176	153
444	do	do	yg	294	98	175	139
476	do	do	♀	910	326	172	147
584	Negros	do	♂	760	264	181	145
633	do	do	♂	840	a264	170	(a)
651	do	do	♂	795	285	171	161
1483	do	do	♂	760	a240	163	(a)
219	do	do	♀	1,145	397	180	148

No	Preocularis	Postoculars	Labials: Upper	Labials: Lower	Labials: Enter eye	Temporals	Scale-rows	Collection
6	1	1	9	10-9	5 6	2+2	15	E H Taylor
109	1	3-2	9	10	5 6	2+2	15	Do
404	1	1	8	10	4 5	2+2	15	Do
431	1	3-2	9	10	4 5 6 / 5 6	2+2	15	Do
435	1	2	9	9	5 6	1+2	15	Do
444	1	2	10	10	5 6	2-2	15	Do
476	1	2	7-9	10	1 / 5 6	1+2	15	Do
584	1	2	9	10	5 6	1+2	15	Do
633	1	2	9	10	5 6	2+2	15	Do
651	1	2	10	9	5 6	1+2	15	Do
1483	1	2	9	10	5 6	2+2	15	Do
219	1	2	11	9	4 5 6 / 5 6	1+2	15	Do

[a] Mutilated

Genus DENDRELAPHIS Boulenger

Leptophis, part, Bell, Zool Journ 2 (1825) 328
Dendrophis, part, Wagler, Syst Amph (1830) 182, Schlegel, Phys Serp 2 (1837) 220, Duméril and Bibron, Erp Gen 7 (1854) 193, Günther, Cat Col Snakes (1858) 148, Rept Brit India (1864) 296, Jan, Elenco Syst Ofid (1863) 85, Boettger Ber Senck Nat. Ges (1886) 111
Dendrelaphis Boulenger, Fauna Brit India, Rept (1890) 339, Cat Snakes Brit Mus. 2 (1894) 87, Griffin, Philip Journ Sci § D 6 (1911) 260

"Maxillary teeth 18 to 23; anterior maxillary and mandibular teeth longest. Head elongate, distinct from neck, eye large, with round pupil Body much elongate, feebly compressed, scales smooth, in 13 or 15 rows, narrow, disposed obliquely, with apical pits, those of the vertebral row not or but very slightly enlarged; ventrals with a suture-like lateral keel and a notch on each side, corresponding to the keel. Tail long, subcaudals in two rows, keeled and notched like the ventrals." (*Boulenger.*)

The genus is distributed over southern Asia and the East Indies There are three Philippine species.

Key to the Philippine species of Dendrelaphis Boulenger

a^1 Ventrals,* 176 to 186, subcaudals, 105 to 113, body with numerous black stripes along entire length Palawan and Balabac
D caudolineatus (Gray) (p 169)

a^2. Ventrals, 169 to 179, subcaudals, 103 to 112, no stripes of any kind on body Luzon, Mindoro, Negros, and Sulu.
D modestus Boulenger (p 172)

a^3 Ventrals, 162 to 186, subcaudals, 94 to 112, a black stripe behind eye, stripes wanting on anterior third of body, usually present on posterior part Luzon, Negros, and Mindanao D terrificus (Peters) (p 174)

DENDRELAPHIS CAUDOLINEATUS (Gray)

Plate 21

Ahætulla caudolineata Gray, Ill Ind Zool 2 (1834) pl 81
Leptophis caudalineatus Cantor, Cat Mal Rept (1847) 85
Dendrophis octolineata Duméril and Bibron, Erp Gen 7 (1854) 201; Jan, Icon Gén (1869) 32, pl 2, fig 1
Dendrophis caudolineata Günther, Cat Col Snakes (1858) 150, Rept Brit India (1864) 297, Günther, Zool Rec (1870) 75, Stoliczka, Journ As Soc Bengal 39 (1870) 194, 42 (1873) 125
Dendrelaphis caudolineatus Boulenger, Fauna Brit India, Rept (1890) 339, Cat Snakes Brit Mus 2 (1894) 89, Griffin, Philip Journ Sci § A 4 (1909) 598, § D 6 (1911) 261

Description of species.—(From No. 414, Bureau of Science collection; collected in Palawan) Head moderately slender;

* Counts of ventrals and subcaudals are for Philippine specimens

eye large, its diameter less than length of snout, rostral broader than deep, the sutures formed with nasal and internasal subequal, internasals a little wider than long, distinctly shorter than prefrontals, and less than half as large; prefrontals somewhat broader than long, broadly in contact with loreal, frontal about one and two-thirds times as long as broad, shorter than parietals, latter one and a half times as long as broad, touching superior postocular and 3 temporals; supraoculars large, about as broad as frontal, in contact with prefrontals, nasal divided, internasal also bordering nostril; loreal two to two and a half times as long as high, preocular large, visible above, 2 postoculars, superior more than twice as large as inferior, 2 small anterior temporals, both in contact with lower postocular; temporal formula, 2 + 2 + 2, 9 upper labials, fifth and sixth (on right side fourth, fifth, and sixth) entering eye; 10 lower labials, 5 touching anterior chin shields, which are broader and shorter than second pair, latter in contact almost two-thirds of their length, scales in 13 rows, with apical pits, median row scarcely larger than adjoining rows, ventrals, 183, strongly keeled and notched; anal divided; subcaudals, 110, keeled and notched

Color in alcohol.—Black above, each scale marked with a longitudinal bluish green mark which leaves the ground color in longitudinal lines, a black line from eye continues back along body on second and third outer scale rows, but not covering entire scales, below this stripe is a straight-edged yellow stripe, covering lower part of second and upper part of first scale rows, below this yellow stripe, covering lower part of first scale rows, is a black stripe beginning on side of neck and continuing to tip of tail, this stripe is broader than the others on body, four dorsal black stripes, the two median narrowest, these four stripes continue to tail and merge into one, tail has five stripes to near tip, and only three at tip, below on belly immaculate greenish blue, a black median stripe on under side of tail.

Measurements of Dendrelaphis caudolineatus (Gray)

	mm
Total length	1,115
Snout to vent	805
Tail	310
Length of head	30
Width of head	14
Diameter of eye	6
Length of snout	7.5

Variation.—Color markings are fairly stable in the specimens of this species taken in the Philippines. The ventrals

vary between 176 and 186, the subcaudals, between 105 and 113; sometimes 3 labials enter the orbit, sometimes 2, both conditions being frequently found in the same specimen. The temporal formula is normally $2 + 2 + 2$, but many specimens have the 2 anterior superior temporals coalesced, leaving the formula $\frac{1}{1+1}+2$

TABLE 33.—*Measurements and scale counts of Dendrelaphis caudolineatus (Gray)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals
				mm	mm		
215	Palawan	C. M. Weber	♂	930	255	176	105
218	do	do	♀	940	265	184	111
219	do	do	♂	346	94	184	
222	do	do	♀	485	126	183	*103
223	do	do	♂	715	181	183	
224	do	do	♂	831	225	185	111
225	do	do	♀	844	227	186	*108
226	do	do	♂	610	152	180	108
227	do	do	♂	750	204	182	113
414	do	do	♀	1 115	310	183	110

No	Labials: Upper	Labials: Lower	Labials: Enter eye	Labials: Touch first chin shields	Preoculars	Postoculars	Temporals	Scale rows	Collection
215	9	10	5,6	5	1	2	2+2	13	Bureau of Science
218	9	10	4 5 6	5	1	2	$\left\{\frac{1}{1+1}+2\right\}$	13	Do
219	9	9	5 6	5	1	2	2+2+2	13	Do
222	9	10	4 5 6	5	1	2	$\left\{\frac{1}{1+1}+2\right\}$	13	Do
223	9	10	$\left\{\begin{matrix}5\ 6\\4\ 5,6\end{matrix}\right\}$	5	1	2	2+2+2	13	Do
224	9	10	5 6	5	1	2	$\left\{\frac{1}{1+1}+2\right\}$	13	Do
225	9	10	5 6	5	1	2	$\left\{\frac{1}{1+1}+2\right\}$	13	Do
226	9	10	5,6	5	1	2	2+2+2	13	Do
227	9	9	5 6	5	1	2	2+2+2	13	Do
414	9	10	$\left\{\frac{5\ 6}{4,5,6}\right\}$	5	1	2	2+2+2	13	Do

* Extreme tip of tail missing

Boulenger * gives the range of ventrals as 171 to 188, of subcaudals, 100 to 112. Boulenger's largest specimen measures 1,520 millimeters in length

* Catalogue, loc. cit

Remarks.—This species appears to be confined to Palawan and Balabac, and possibly also enters the Calamianes, north of Palawan. Outside Philippine territory it is known in southern India, Malay Peninsula, and East Indies. The species is arboreal. It is harmless.

DENDRELAPHIS MODESTUS Boulenger

PLATE 13, FIGS. 6 AND 7

Dendrelaphis modestus BOULENGER, Cat. Snakes Brit. Mus. 2 (1894) 91, pl. 4, fig. 4; GRIFFIN, Philip. Journ. Sci. § D 6 (1911) 261; TAYLOR, Philip. Journ. Sci. § D 12 (1917) 359.

? *Dendrelaphis pulgnosus* GRIFFIN, Philip. Journ. Sci. § A 4 (1909) 55, § D 6 (1911) 261; TAYLOR, Philip. Journ. Sci. § D 12 (1917) 359.

Description of species.—(From No. 184, E. H. Taylor collection, collected at Isabela, Occidental Negros, at about 300 meters elevation, October 8, 1915, by E. H. Taylor.) (Adult male.) Head rather slenderer than in *Dendrelaphis terrificus*, distinct from body, rostral three-fourths as deep as wide, forming subequal sutures with internasals and nasals, rather pointed behind, broadly visible from above, internasals about as broad as long, sutures with nasal curved; prefrontals large, extending down on side to level of middle of eye, much wider than deep, longer than internasals; frontal one and two-fifths times as long as broad, equal to or a little less than its distance from end of snout, longer and wider than supraocular; parietals longer than frontal, longer than wide, with a row of 8 rather enlarged occipital scales bordering temporals and parietals posteriorly; nasal divided in subequal parts, both the same height; loreal elongate, two and a half times as long as high, preocular visible from above as a point, widely separated from frontal, widened above, coming to a point below, supraocular slightly projecting, 2 postoculars, the superior, largest, touching parietal, the inferior in contact with both anterior temporals, temporals 2 + 2 + 2, increasing greatly in size posteriorly, 9 upper labials, fifth and sixth entering eye; 10 lower labials, 5 touching anterior chin shields, which are wider and but little shorter than posterior pair, scales in 13 rows, the median row slightly enlarged and slightly differentiated from the lateral rows, but without pits; scales of other rows with pits; scales somewhat rectangular, overlapping on sides, ventrals and subcaudals with lateral keels and notches, ventrals 169, anal double, subcaudals 107, length of eye equal to or minutely less than

its distance from nostril, vertical diameter of eye less than the horizontal

Color in life.—Rich olive brown above, head reddish to copper brown, which color continues some distance on neck; outer row of scales and half of second a slightly lighter shade of olive brown; below light bluish green with the edges of ventrals tinged with the olive brown of the outer row of scales; each scale has a bright bluish spot which is usually hidden until the skin is distended; skin between scales a purplish black; a few small, scattered, dark spots on head, the apical pits appear as minute dark spots; there is a trace of a dark line above last upper labials; the lower part of upper labials rather creamy yellow tinged with greenish, lower labials yellowish.

Measurements of Dendrelaphis modestus Boulenger

	mm
Total length	914
Snout to vent	660
Tail	254
Length of head	24
Width of head	10

Variation.—The species here described differs from Boulenger's *Dendrelaphis modestus* of Ternate in having a lower average of ventrals. I do not doubt that I have correctly referred the specimens to this species

Griffin's *D fuliginosus* * is undoubtedly a young discolored specimen of this species. I have three specimens, a young and two adults, from Negros.

The greatest variation found in the Philippine specimens of this species occurs in one from Bubuan Island, Sulu Archipelago An orange stripe is present in life behind the eye, continuing some distance on the neck. This stripe is formed by a wash color over the greenish ground color and disappears largely in alcohol The eye is larger, its diameter greater than distance from eye to nostril The labials on one side are broken, leaving two loreals, two preoculars, and two suboculars, the labials not entering the orbit.

Remarks.—This species in the Philippines is known to occur in Palawan, Mindoro, Negros, and Sulu The type is from Ternate

* See Taylor, Philip Journ Sci § D 12 (1917) 359, in the statement "The type has a few more ventrals and subcaudals than the type of *D modestus*" *for* a few more *read* a few less

TABLE 34.—*Measurements and scale counts of Dendrelaphis modestus Boulenger*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals	Subcaudals
				mm	mm		
184	Isabela Negros	E H Taylor	♂	914	254	169	107
210	La Granja, Negros	do	yg	325	85	176	108
326	do	do	♀	1,055	299	173	110
409	Mindoro	Marine Biological Expedition	o	710	a 26	178	(a)
410	do	W Schultze	yg	325	85	179	112
411	Palawan	C M Weber	♂	(b)			103
412			♂	860	236	176	106
413	Mindoro	Marine Biological Expedition	♂	1,051	296	179	112
1833	Bubuan Island	E H Taylor	♂	875	b 190	176	b 69

No	Labials: Upper	Labials: Lower	Labials: Enter eye	Labials: Touch first chin shields	Preoculars	Postoculars	Temporals	Scale rows	Collection
184	9	10	5,6	5	1	2	2+2+2	13	E H Taylor
210	9–10	10	5,6	5	1	2	2+2+2	13	Do
326	9	10	5,6	5	1	2	2–2+2	13	Do
409	9	10	5 6	5	1	2	2+2+2	13	Bureau of Science
410	9	10	5,6	5	1	2	2–2+2	13	Do
411	9	10	5 6	5	1	2	2+2–2	13	Do
412	9	10	5 6	5	1	2	2+2+2	13	Do
413	9	10	5 6	5	1	2	2+2+2	13	Do
1833	9-8	10	5 6	5	1-2	2	2+2+2	13	Do

[a] Tip of tail mutilated [b] Body mutilated

DENDRELAPHIS TERRIFICUS (Peters)

PLATES 22 AND 23

Dendrophis picta, var B, GUNTHER, Cat Col Snakes (1858) 149

Dendrophis punctulata (spec o) GUNTHER, Cat Col. Snakes (1858) 150

Dendrophis terrificus PETERS, Mon Berl Ak (1872) 583, BOETTGER, Ber Senck Nat Ges (1886) 111, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 433

Dendrophis philippinensis GUNTHER, Proc Zool Soc London (1879) 78, pl 4

Dendrelaphis terrificus BOULENGER, Fauna Brit India, Rept (1890) 339, Cat Snakes Brit Mus 2 (1894) 90, GRIFFIN, Philip Journ. Sci § D 6 (1911) 261

?*Dendrelaphis caudolineatus* GRIFFIN, Philip Journ Sci § A 4 (1909) 55, § D 6 (1911) 261

Description of species.—(From No 83, E. H. Taylor collection, collected at Bunawan, Agusan, Mindanao, July 10, 1913.

by E. H Taylor.) (Adult male.) Head very distinct from body; rostral at least one and one-third times as broad as deep, broadly visible from above, its longest suture with anterior nasal; internasals rather large, little longer than wide, the suture formed with nasals a curved line, which is longer than the suture formed with prefrontals; suture between prefrontals equal to or slightly longer than that between internasals, prefrontal as long as or a little longer than internasal, very much wider than long, extending down to near the level of middle of eye, frontal about one and a half times as long as broad, as long as but wider than supraoculars, not as long as its distance from end of snout, parietals but little longer than frontal, longer than wide; nasal divided, anterior part largest and highest; loreal narrow, long, two and a half to three times as long as wide; 1 preocular, visible from above, not touching frontal, in contact with 3 labials below; 2 postoculars, upper largest, in contact with parietal; temporals, $2 + 2 + 2$, 9 upper labials, fifth and sixth entering eye (on the left side the 2 scales are nearly fused), 10 lower labials (9 on one side), 5 in contact with anterior chin shields, which are much shorter and wider than posterior, mental wider than deep; scales in 13 smooth rows, overlapping, disposed obliquely, more or less rectangular (with single apical pits), arranged in oblique, vertical rows, outer row of scales very much larger than median, which is scarcely larger than adjoining rows; ventrals keeled and notched on ends; ventrals 164; anal divided, subcaudals 96, in double rows, length of eye equal to its distance from nostril, eye longer than deep.

Measurements of Dendrelaphis terrificus (Peters)

	mm.
Total length	1,045
Snout to vent	770
Tail	275
Length of head	30
Width of head	17
Eye to tip of snout	10
Length of eye	6

Color in life.—Bright greenish bronze (when scales are shed in alcohol, bluish green to blue), each scale with a concealed lower portion bright blue, only noticeable when the skin is distended; scales edged for the most part with black, the skin between them also black, head somewhat darker brown above; a broad black stripe begins behind eye and continues some distance on side of neck, growing narrower; a zigzag black line borders

ventrals; above this is a yellowish brown stripe, lighter than the body color, growing more indistinct as it continues along body; a zigzag line between subcaudals; a blackish area in loreal region; the black edges of the scales are more prominent on anterior part of body; lips and chin a greenish yellow; belly immaculate yellow

TABLE 35.—*Measurements and scale counts of Dendrelaphis terrificus (Peters)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals
				mm	mm		
82	Mindanao	E H Taylor	♀	1 060	285	163	95
83	do	do	♂	1,045	275	164	98
81	do	do	♂	765	200	162	94
405	Camiguin[a]	R C McGregor	♂	1 040	285	184	112
407	do	do	♂	830	200	181	103
404	Polillo	C Canonizado	♀	1 050	301	171	109
406	do	do	♀	1,085	304	169	105
408	Manila	M Ligaya	♀	1 255	330	177	97
213	Siquijor	A Celestino	♂	640	225	170	104
214	Bantayan	do	♂	1 055	287	186	105

No	Labials				Preoculars	Postoculars	Temporals	Scale rows	Collection
	Upper	Lower	Enter eye	Touch first chin shields					
82	9	10-11	5 6	5	1	2	2 2+2	13	E H Taylor
83	9	10-9	5 6	5	1	2	2+2+2	13	Do
81	9	10	5 6	5	1	2	2+2+2	13	Do
405	9	10	5,6	5	1	2	2+2+2	13	Bureau of Science
407	9	10	5,6	5	1	2	2+2+2	13	Do
404	9	11	5 6	5	1	2	2+2+2	13	Do
406	9	10	5 6	5	1	2	2+2+2	13	Do
408	9	10	5 6	5	1	2	2+2+2	13	Do
213	9	10	5 6	5	1	2	2+2+2	13	Do
214	9	10	5 6	5	1	2	2+2+2	13	Do

[a] Island north of Luzon

Variation.—There are two fairly well-defined color variations evident in this species, one group represented in the Visayan Islands, Mindanao, and Polillo (*Dendrophis philippinensis* of Gunther and *Dendrelaphis caeruleatus* of Griffin), and the second group in Luzon and islands to the north (*Dendrophis caudolineatus* of Peters[*] non Gray and *Dendrophis octolineatus* of Parenti and Picaglia[†])

[*] Mon Berl Ak (1861) 688

[†] Atti Soc Nat Modena, Mem Orig 5 (1886) 50

The former group has a broad black band behind the eye which continues some distance on the neck and then disappears, the outer row of scales and the outer edges of the ventrals are black, thus forming a ragged-edged stripe; above this is a yellowish green stripe lighter than the lateral body color The skin between scales is largely black, and many of the scales are edged with black.

The latter group has the black stripe behind the eye which continues to some distance on the neck where it disappears, usually to reappear as a narrow black line above the lateral yellow-green line on the posterior two-thirds of the body; the dark edges of the scales form 8 longitudinal lines, most of which are very distinct, and some of them continue on tail

Due to the fact that the scale formulæ are practically the same in the two groups I do not believe they should be regarded worthy of subspecific distinction.

Remarks.—The species is known in the Philippines from Mindanao, Samar, Polillo, Negros, Bantayan, Banton, Siquijor, Ticao, Luzon, and Camiguin It is an arboreal species. Outside the Philippines it is known in Celebes

Genus PSEUDORHABDIUM Boulenger

Rabdion, part, Duméril and Bibron, Mém Ac Sci 23 (1853) 441, and Erp Gen 7 (1854) 115, Casto de Elera, Cat Fauna Filipinas 1 (1895) 426

Pseudorabdion Jan, Arch Zool Anat Phys 2 (1862) 10

Oxyrhabdium Günther, Rept Brit India (1864) 199, Boettger, Ber Senck Nat Ges (1886) 105, Casto de Elera, Cat Fauna Filipinas 1 (1895) 425

Rhabdion Boettger, Ber Senck Nat Ges (1886) 106

Pseudorhabdium Boulenger, Cat Snakes Brit Mus 2 (1894) 328, Griffin, Philip Journ Sci § D 6 (1911) 261, Taylor, Philip Journ Sci § D 12 (1917) 362

Maxillary teeth, 10 to 12, subequal; anterior mandibulary teeth slightly longer than posterior, head not distinct from neck; eye small, with round pupil, nostril pierced in a minute nasal, internasals small, loreal present or absent, preocular small or absent, no anterior temporals, parietals in contact with labials, body cylindrical, scales smooth, without apical pits, in 15 rows; ventrals rounded; tail short, subcaudals in 2 rows.

Key to the species of Pseudorhabdium Boulenger

*a*¹ No loreal present

*b*¹ Frontal longer than broad, preocular usually present, supraocular small. . P longiceps (Cantor) (p 178).

b^3 Frontal little broader than long, supraoculars smaller still, preocular usually wanting . . . . . P oxycephalum (Gunther) (p 179)

a^2. Loreal present, no preocular, postocular distinct or fused with supraocular . . . . . P menamaræ Taylor (p 180).

The three known species of the genus are found in the Philippines All are small, burrowing snakes, seldom attaining a length of more than 280 millimeters *Pseudorhabdium oxycephalum* and *P. menamaræ* appear to be confined to the Philippines. The third species is widely distributed, being found in Malay Peninsula and other large East Indian islands.

PSEUDORHABDIUM LONGICEPS (Cantor)

Calamaria longiceps CANTOR, Cat Mal Rept (1847) 63, pl, fig 1

Rabdion torquatum DUMÉRIL and BIBRON, Erp Gen 7 (1854) 119, PETERS, Mon Berl Ak (1861) 684, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 426

Pseudorabdion torquatum JAN, Arch Zool Anat Phys 2 (1862) 10, and Icon Gen (1865) 10, pl 3, fig 3

Oxycalamus longiceps GUNTHER, Rept Brit Ind (1864) 199, STOLICZKA, Journ As Soc Bengal 42 (1873) 120

Pseudorhabdion longiceps BOULENGER, Ann & Mag Nat Hist V 16 (1885) 389

Rhabdion torquatum BOETTGER, Ber Senck Nat Ges (1886) 106

Pseudorhabdium longiceps BOULENGER, Cat Snakes Brit Mus 2 (1894) 329, GRIFFIN, Philip Journ Sci § D 6 (1911) 261, BARBOUR, Mem Mus Comp Zool Harv Coll 44 (1912) 119

Description of species.—(From Boulenger, Catalogue) "Snout rather pointed. Rostral small, as deep as broad, well visible from above, suture between the internasals one third or one fourth the length of that between the prætrontals, frontal a little longer than broad, as long as or a little shorter than its distance from the end of the snout, shorter than the parietals, more than twice as broad as the supraocular, præocular small (rarely absent), one postocular, five upper labials, third and fourth entering the eye, symphysial in contact with the anterior chin-shields; three lower labials in contact with the anterior chin-shields, which are about twice as large as the posterior. Scales in 15 rows Ventrals 129–146, anal entire, subcaudals 10–28 Tail pointed Iridescent brown or black, with or without a yellowish collar; usually a yellowish vertical spot above the angle of the mouth"

Measurements of Pseudorhabdium longiceps (Cantor)

	mm
Total length	230
Snout to vent	195
Tail	35

Remarks.—The only record for this snake in the Philippines is that of Peters, at Daraga, Luzon. Evidently it is very rare. The species is known from Malay Peninsula, Borneo, Nias, Sumatra, and Celebes.

PSEUDORHABDIUM OXYCEPHALUM (Gunther)

Rhabdosoma oxycephalum GUNTHER, Cat Col Snakes (1858) 242
Oxycalamus oxycephalus GUNTHER, Proc Zool Soc London (1873) 168 (fig), BOETTGER, Ber Senck Nat Ges (1886) 105, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 425
Pseudorhabdium oxycephalum BOULENGER, Cat Snakes Brit Mus 2 (1894) 329, GRIFFIN, Philip Journ Sci § D 6 (1911) 262, TAYLOR, Philip Journ Sci § D 12 (1917) 364

Description of species.—Closely allied to *Pseudorhabdium longiceps*. Frontal a little broader than long, about half as long

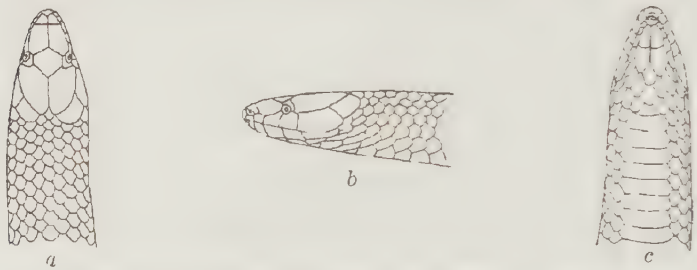

FIG 14. *Pseudorhabdium oxycephalum* (Gunther), after Boulenger. *a*, head, dorsal view *b*, head, lateral view *c*, head, ventral view

as parietal; supraoculars narrow, smaller still, and confluent with postocular, no separate postocular, rostral barely visible above; internasals small, about one-sixth of prefrontals, latter longer than wide, in contact with 2 labials, entering eye; internasal in contact with second labial; no loreal or preocular; a large posterior temporal bordering parietals; frontal broader than long, about four or five times as wide as supraocular, 5 upper labials, third and fourth entering eye, fifth largest; 3 lower labials touching first chin shields, which are as long as but narrower than second pair, scales in 15 smooth rows, with no apical pits; anal entire, male, ventrals, 136, subcaudals, 23; female, ventrals, 152; subcaudals, 16

Color.—Uniform iridescent blackish brown.

Measurements of Pseudorhabdium oxycephalum (Gunther)

	mm
Total length	280
Snout to vent	260
Tail	20

Remarks.—This species is known from Negros, where it was collected by A. B. Meyer. The type, collected by Cuming, is labeled "Philippines," the exact locality is no longer known. Only a few specimens appear to be known.

PSEUDORHABDIUM MCNAMARÆ Taylor

Pseudorhabdium mcnamarae TAYLOR, Philip. Journ. Sci. § D, 12 (1917) 263.

Description of species.—(From the type, No. 196, E. H. Taylor collection; collected on Canlaon Volcano, Occidental Negros, December 24, 1915, at an elevation of about 900 meters, by E. H. Taylor.) Rostral small, about as wide as high, a large part visible from above, internasals moderate, five-sided, their

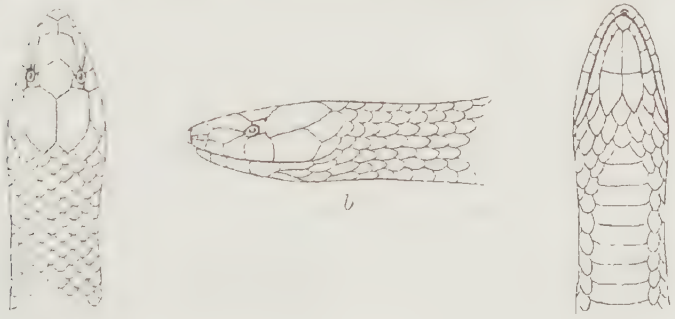

FIG. 15. *Pseudorhabdium mcnamarae* Taylor. *a*, head, dorsal view. *b*, head, lateral view. *c*, head, ventral view.

sutures with nasal and prefrontal equal, forming their shortest suture with loreal, prefrontals nearly three times as large as internasals, entering eye, touching frontal, loreal, internasal, and supraocular, the longest suture with loreal, the shortest with supraocular, frontal hexagonal, a little wider than long, the sides touching supraoculars shortest, the parietal sides longest; parietals at least twice as long as wide, six-sided, in contact with fifth labial; nasal rectangular, much elongate, with nostril pierced near anterior edge close by rostral, behind this a very much enlarged, elongate loreal, in contact with second and third labials, entering eye, supraocular extending over only posterior part of eye and somewhat behind; postocular fused with supraocular, no anterior temporals, a single large posterior temporal behind fifth labial, bordering on parietal, 5 upper labials, fifth largest, in the following order of size: fifth, third, fourth, second, first; third and fourth enter eye; 5 lower

labials; mental small, in contact with anterior chin shields, and separating first labials; 3 labials touch anterior chin shields; second pair of chin shields slightly smaller than first; eye very small, anal undivided; ventrals, 140; subcaudals, 22; scales smooth, in 15 rows.

Color in life.—Above very shiny, more or less iridescent, dark blackish brown to bluish brown; about neck is a more or less distinct yellow collar (dim or almost wanting in adults), formed above by three or four small yellow spots; a cream-colored spot on fifth upper labial; below canary to yellowish cream with a dark area on outer edge of each ventral; posterior ventrals mottled, and subcaudals almost uniformly dark; occasional dark areas on middle part of ventrals

Measurements of the type of Pseudorhabdum mcnamarae Taylor

	mm
Total length	242
Snout to anus	220
Tail	22
Width of head	5.5
Width of body	5

Variation.—Males and females differ in the number of ventrals and subcaudals, the averages being for males: ventrals, 131; subcaudals, 28; for females, ventrals, 142; subcaudals, 22. Four specimens show the postocular fused with the supraocular, and in No. 197 a preocular is present. There is some variation in the relative length and width of the frontal. In some specimens these are equal and in one or two the length slightly exceeds the width. The females have the underside of the tail uniformly dark, while the males have it mottled and lighter. Nos. 192, 193, 194, and 195 have the second and third lower labials fused, thus leaving only two labials touching the first chin shields.

Remarks.—The species is rather common at altitudes of 800 to 900 meters on Canlaon Volcano. No specimens were taken at a higher or lower altitude. They were found under logs and rotting trash. They feed on earthworms and are in turn preyed upon by *Cyclocorus lineatus*, which is plentiful in the same locality. Specimens were usually found in pairs, a male and a female, in the same place. The females taken in December contained three undeveloped eggs. The species is named for Mr. Homer McNamara, superintendent of the La Carlota Agricultural Station, who rendered able assistance in making collections on the volcano.

This species represents a distinct section of the genus in having a loreal present.

TABLE 36.—*Measurements and scale counts of Pseudorhabdium mcnamaræ Taylor*

No	Locality	Collector	Sex or age	Length
				mm
186	Mount Canlaon Negros	E H Taylor	♀	198
187	do	do	♂	180
188	do	do	♂	163
189	do	do	♀	217
190	do	do	♀	229
191	do	do	○	205
192	do	do	♀	212
193	do	do	♂	163
194	do	do	♂	178
195	do	do	♂	86
196	do	do	♀	242
197	do	do	♀	209

No	Tail	Ventrals	Subcaudals	Preoculars	Character of postocular	Collection
	mm					
186	17	143	23	0	Distinct	E H Taylor
187	16	134	27	0	do	Do
188	18	136	28	0	do	Do
189	18	145	22	0	do	Do
190	20	142	21	0	Fused	Do
191	19	141	22	0	Distinct	Do
192	16	145	20	0	do	Do
193	20	129	27	0	do	Do
194	20	130	28	0	Fused	Do
195	11	130	29	0	Distinct	Do
196	22	140	22	0	Fused	Do
197	20	140	28	1	do	Do

Genus TYPHLOGEOPHIS Gunther

Typhlogeophis GUNTHER, Proc Zool Soc London (1879) 77, BOETTGER, Ber Senck Nat Ges (1886) 106, BOULENGER, Cat Snakes Brit. Mus 2 (1894) 351

Typhlogeophus CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 425.

"Maxillary teeth 8, subequal mandibular teeth subequal. Head not distinct from neck; eye concealed under the ocular shield, no supraocular; nostril pierced in a minute nasal, internasals small; no loreal or præocular; no temporals, the parietals in contact with the labials Body cylindrical; scales smooth, without apical pits, in 15 rows Tail short; subcaudals in two rows." (*Boulenger.*)

This genus is known only from the Philippines It consists of a single known species, *Typhlogeophis brevis*, which is known only from the type Judging by the absence of external eyes, the species is subterrestrial in habit.

TYPHLOGEOPHIS BREVIS Gunther

PLATE 24, FIGS 1 TO 4

Typhlogeophis brevis GUNTHER, Proc Zool Soc London (1879) 77, BOETTGER, Ber Senck Nat Ges (1886) 106, BOULENGER, Cat Snakes Brit Mus 2 (1894) 351; GRIFFIN, Philip Journ Sci § D 6 (1911) 262

Typhlogeophus brevis, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 425

Description of species.—(From Boulenger.) "Snout rather pointed, rostral very small, nearly as deep as broad, just visible from above, suture between the internasals about half the length of that between the præfrontals; frontal small, as long as broad, shorter than its distance from the end of the snout, half as long as the parietals; five upper labials, fourth in contact with the ocular, fifth very large; two pairs of chin-shields, anterior largest Scales in 15 rows Ventrals 153, anal entire, subcaudals about 15 Uniform blackish, scales and shields with whitish edge

FIG 1b *Typhlogeophis brevis* Gunther after Boulenger head dorsal view

"Total length, 330 millim"

Remarks—Only the type specimen appears to have been collected, and the exact locality is now unknown It was taken by A. Everett, either on Mindanao or on Dinagat

Genus CALAMARIA Boie

Calamaria BOIE, Ferussac, Bull Sc Nat 9 (1826) 236, Isis (1827) 519, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 60, GUNTHER, Cat Col Snakes (1858) 3, Rept Brit India (1864) 105, JAN, Arch Zool Anat Phys 2 (1862) 4, BOETTGER, Ber Senck Nat Ges (1886) 105, BOULENGER, Fauna Brit India, Rept (1890) 281; Cat Snakes Brit Mus 2 (1894) 330, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 424

Calamaria, part, SCHLEGEL, Phys. Serp 2 (1837) 25, WAGLER, Syst Amph (1830) 191

Typhlocalamus GUNTHER, Proc Zool Soc (1872) 595

"Maxillary teeth 8 to 11, subequal; anterior mandibular teeth a little longer than the posterior. Head not distinct from neck; eye small, with round pupil; nostril pierced in a minute nasal;

no loreal,* no internasals; præocular present or absent; no temporals, the parietals in contact with the labials Body cylindrical; scales smooth, without apical pits, in 13 rows; ventrals rounded Tail short, subcaudals in two rows." (*Boulenger.*)

This genus is widely distributed and consists of numerous species, most of which are local and variable The snakes are small, never or very rarely attaining half a meter in length, most of the species being less than a third of a meter in length. The species are without grooved fangs, and are harmless.

Key to the Philippine species of Calamaria Boie †

a^1 Mental in contact with anterior chin shields; no loreal

b^1 Frontal less than twice as broad as supraocular, young, reddish white with black rings, adults, black above, barred with alternate bands of black and white below C grayi Gunther (p 184)

b^2 Frontal almost twice as broad as supraocular, rostral as deep as broad, frontal nearly as long as parietals, young, light brown above, barred with darker brown, only a few anterior bars in adults, uniform yellowish below C bitorques Peters (p 185)

b^3 Rostral as deep as broad, frontal shorter than parietals

c^1 Tail length in total length fourteen to twenty times, brown above, with several fine light streaks on each side; yellow or barred black and yellow below C gervaisii Duméril and Bibron (p 186)

c^2 Tail length in total length nine and one-half times, brown with a row of white dots on sides, on outer scale row C suluensis sp nov (p 189)

b^4 Rostral broader than deep, frontal shorter than parietals, brown above with longitudinal series of black dots, a yellow spot on each side of neck C mindorensis Boulenger (p 190).

a^2 Mental not in contact with anterior chin shields, no loreal

b^1 Diameter of eye much more than its distance from mouth, brown above, with 2 longitudinal rows of dark spots on each side of a line of white dots C everetti Boulenger (p 191)

b^2 Diameter of eye less than half its distance from mouth, 250 ventrals, dark brown above, with the 2 outer scale rows tipped with yellowish, a yellow collar on neck, a pair of large pale lateral spots at base of tail C mearnsi Stejneger (p 193)

a^3 Mental in contact with first chin shields, a loreal present, above, brown with darker dots, a dark brown nuchal collar, edged with yellow anteriorly and posteriorly, immaculate below C tropica sp nov (p 194)

CALAMARIA GRAYI Gunther

Calamaria grayi GUNTHER, Cat Col Snakes (1858) 6, BOETTGER, Bei Senck Nat Ges (1886) 105, BOULENGER, Cat Snakes Brit

* *Calamaria tropica* has a loreal—E H T

† Casto de Elera lists *C vermiformis* and *C temminckii* These records are probably erroneous

Mus 2 (1894) 338, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 424, GRIFFIN, Philip Journ Sci § D 6 (1911) 262

Calamaria lumbricoidea, part, GUNTHER, Cat Col Snakes (1858) 5

Calamaria philippinica STEINDACHNER, Verh Zool Bot. Ges Wien 17 (1867) 514, pl 13, figs 4–6

Description of species.—(From Boulenger.) "Snout very short and broadly rounded Rostral nearly as deep as broad, well visible from above; frontal a little longer than broad, shorter than the parietals, not twice as broad as the supraocular; one præ- and one postocular, diameter of the eye less than its distance from the mouth; five upper labials, the four anterior subequal in size, third and fourth entering the eye; symphysial in contact with the anterior chin-shields; two pairs of chin-shields, in contact with each other Scales in 13 rows Ventrals 175–195; anal entire; subcaudals 14–24. Tail ending in a rather obtuse point Young reddish white, with black rings, adult uniform blackish above, alternately barred black and white below.

Measurements of Calamaria grayi Gunther

	mm
Total length	365
Snout to vent	330
Tail	35

Remarks.—The types were collected in the Philippines by H. Cuming, 1832–1834, the exact locality is not known, and the species has not been rediscovered

CALAMARIA BITORQUES Peters

Calamaria gervaisii, part, GUNTHER, Cat Col Snakes (1858) 4

Calamaria bitorques PETERS, Mon Berl Ak (1872) 585, BOETTGER, Ber Senck Nat Ges (1886) 105, BOULENGER, Cat Snakes Brit Mus 2 (1894) 338, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 424, GRIFFIN, Philip Journ Sci § D 6 (1911) 262

Description of species.—(From No 606, Bureau of Science collection; locality and collector unknown, probably from Luzon.) (Adult female.) Head not distinct from body, rostral as wide as deep, broadly visible above; internasals and loreal wanting; prefrontals very large, in contact with 2 labials and rostral, not entering eye, frontal distinctly longer than broad, little less than twice as broad as supraoculars, longer than its distance to end of snout, little shorter than parietals; latter large, as broad as long, nostril in a minute nasal, 1 small preocular; 1 small postocular touching 2 labials and parietal; no anterior temporals, a large posterior temporal bordering parietal; 5 upper labials, last very large, first 4 subequal, third and fourth entering eye; mental rather large, in contact with

large anterior pair of chin shields, second pair about half as large, not separated, 5 lower labials, 3 touching first pair of chin shields, scales in 13 rows, smooth, ventrals 186; anal entire, subcaudals 18, diameter of eye equal to or slightly less than its distance from mouth, tail ending in a blunt point

Color in alcohol *—Dull yellowish brown above with brownish bands, separated by lighter interspaces on anterior fourth of body, these bands are narrow, scarcely more than the width of one scale; the yellowish interspaces are only two or three scales wide, head with a brown spot on each parietal; below, uniform yellowish

Measurements of Calamaria bitorques Peters

	mm
Total length	365
Snout to vent	343
Tail	22
Width of head	7 5
Length of head	9 8

Variation—The females have a much larger number of ventrals and a smaller number of subcaudals than the males The range known is: For females, ventrals, 183 to 199, subcaudals, 13 to 18; for males, ventrals, 151 to 158; subcaudals, 18 to 21

Remarks—This rare species is known only from Luzon There is a single specimen in the collection of the Bureau of Science, without locality attached Boulenger † lists five specimens from Luzon

CALAMARIA GERVAISII Duméril and Bibron

Calamaria virgulata (non Boie) EYDOUX and GERVAIS, in Guer Mag Zool Cl 3 (1837) pl 16, figs 7–10, Voy Favorite, Zool 5 (1839) pl 30, figs 7–10

Calamaria gervaisii DUMERIL and BIBRON, Erp Gen 7 (1854) 76; JAN, Arch Zool Anat Phys 2 (1862) 8, Icon Gén (1865) 10, pl 2, fig 1, GUNTHER, Proc Zool Soc London (1879) 77, PETERS Mon Berl Ak (1861) 684, MULLER III Nacht Cat Herp. Samml Basel Mus (1883) 12, FISCHER Jahrb wiss Anst Hamburg 2 (1885) 80, BOETTGER, Ber Senck Nat Ges (1886) 105, BOULENGER, Cat Snakes Brit Mus 2 (1894) 398, GRIFFIN, Philip Journ Sci § D 6 (1911) 262

Calamaria gervaisii part, GUNTHER Cat Col Snakes (1858) 4

* The specimen is in an indifferent state of preservation and most of the original color and markings have disappeared

† Catalogue, loc cit

There are two known subspecies of *Calamaria gervaisii* in the Philippines.* These are *Calamaria gervaisii gervaisii* and *Calamaria gervaisii iridescens*. They may be distinguished as follows:

Key to the subspecies of Calamaria gervaisii Duméril and Bibron

a^1. Ventrals, males, 148 to 158, females, 162 to 167, subcaudals, males, 15 to 18, females, 12 or 13, brown with 3 lateral rows of white dots, and usually 4 dorsal rows of black dots
C. g. gervaisii Duméril and Bibron (p. 187)

a^2. Ventrals, males, 158 to 165, females, 178 to 180, subcaudals, males, 18 or 19, females, 14, dark iridescent brown above, only a single row of white dots along side of body
C. g. iridescens Taylor (p. 188)

The former subspecies is especially common in Luzon, even in the city of Manila.† It is a gregarious, burrowing species.

CALAMARIA GERVAISII GERVAISII Duméril and Bibron‡

Description of subspecies.—(From No. 941, E. H. Taylor collection, collected in Manila by W. Schultze.) (Adult female.) Head not distinct from body, rostral broadly visible above, prefrontals large; no internasals; frontal longer than broad, about twice the width of supraocular, much shorter than parietals; latter in contact for more than half their length; nasal very small, a mere rim around nostril, surrounded by rostral, first labial, and prefrontal; 1 small preocular, 1 small postocular, 6 upper labials, fifth largest, third and fourth entering eye; no anterior temporals, one posterior temporal; 6 lower labials, the 3 anterior touching first chin shields which are in contact with mental, second pair of chin shields about half as large as first pair, barely in contact anteriorly. Scales in 13 smooth rows, ventrals, 162, anal single; subcaudals, 12. Tail length is contained in total length twenty times.

Color in life.—Above, light brown with four rows of small, longitudinal, dark dots dorsally. The three outer scale rows with white dots, those on first and third rows largest and most distinct, upper and lower edges of scales of outer row very dark brown, as are also edges of ventral scales; belly yellow-orange, ventrals with numerous small dots of dark color, with posterior edges of many scales dimly edged with darker, lower

* Boulenger's variety C. may represent a distinct subspecies.

† Kenneth, Carl, and Bettie Knust, three ardent young herpetologists, collected more than 300 specimens of *C. gervaisii gervaisii* about the yard of their home in Malate, Manila.

‡ For synonymy see species.

part of upper labials yellow; chin and lower labials yellow, latter with dark dots; a dark line on underside of tail.

Measurements of Calamaria gervaisii gervaisii Duméril and Bibron

	mm
Total length	260
Snout to vent	247
Tail	13
Length of head	7 5
Width of head	5 5

Variation.—The chief differences in specimens are sexual. The females have longer bodies and shorter tails than the males, and a correspondingly larger number of ventrals and smaller number of subcaudals The length of the tail in the females is contained in the total body length twenty times; in the males, fourteen times

Remarks.—The females lay from three to six eggs, which are usually three times as long as wide The young agree very well with the adults in coloration A very common species. Due to its gregarious habits it is known to many Filipino peoples as *ahas-na-cuyog* The subspecies is restricted to the Philippines, known to occur in Luzon

CALAMARIA GERVAISII IRIDESCENS Taylor

Calamaria gervaisii iridescens TAYLOR, Philip Journ Sci § D 12 (1917) 360

Description of subspecies.—(No 201, E H. Tayor collection, collected on Canlaon Volcano, Occidental Negros, December 23, 1915, at an elevation of about 900 meters, by E H Taylor) (Adult female) Rostral a little deeper than broad, the part visible above equal to the suture between prefrontals, internasals absent, prefrontal very large, about as broad as long, touching 2 labials laterally ; loreal absent, frontal much longer than its distance from end of snout, twice as wide as supraoculars, shorter than and not as wide as parietals; nostril pierced in a minute nasal, latter fan-shaped, 1 preocular, very small; supraocular scarcely twice as long as wide; 1 small postocular; 5 upper labials, last largest, third and fourth entering eye, an elongate posterior temporal behind fifth labial, bordering parietal, mental as deep as wide, touching chin shields; 3 labials touch first pair of chin shields, which are much larger and slightly wider than second pair ; scales in 15 rows; ventrals 178, subcaudals 14, anal single, tail length 21.8 in total length

Color in life.—Dark, iridescent brown above, with a very indistinct series of four darker lines, each minutely powdered with a lighter color Series of white dots begin on outer row of scales and continue regularly to base of tail A second row of dots begins on second row of scales, but continues only a short distance Top of head mottled with dark brown, labials almost covered with yellowish white Lower labials and scales on neck and chin yellow, with brown maculations Ventrals barred across belly with blackish brown and canary-yellow bars, less heavy coloration in front of anus, underside of tail with a median dark line.

Measurements of Calamaria gervaisi iridescens Taylor

	mm
Total length	306
Snout to vent	292
Tail	14

Variation.—Five specimens taken agree very well, save that the barring on the belly is much less distinct in very young ones. The females have more ventrals and less subcaudals than the males

Remarks.—This subspecies is common on Canlaon Volcano. Specimens were obtained from under logs. One specimen was disgorged by a captured specimen of *Cyclocorus lineatus*

CALAMARIA SULUENSIS sp nov

Calamaria gervaisi TAYLOR, Philip Journ Sci § D 13 (1918) 260

Type.—No 1837, Bureau of Science collection, collected on Cagayan Sulu, November, 1917, by E H Taylor

Description of type.—Rostral about as broad as deep, visible above; no internasal, prefrontals large, in contact with 2 labials laterally, frontal about one-third longer than wide, two and a half times as wide as supraocular, shorter than parietals, latter in contact for a little more than half their length, in contact with fifth labial, nasal a mere rim about nostril, no loreal present; 1 preocular, higher than wide; 1 postocular, no anterior temporals; 1 posterior temporal, 6 upper labials in following order of size: fifth, second, third, first, fourth, sixth, the third and fourth entering eye; 6 lower labials, 3 touching anterior chin shields, first pair of labials not in contact, posterior chin shields nearly three-fourths as long as anterior Scales in 13 smooth rows; ventrals 154, anal single, subcaudals 25, tail much narrowed behind anus, its length contained in total body length nine and a half times.

Color in life.—Above iridescent brown; many scales on anterior part of body with darker spots, a row of white spots on outer row of scales, lower edge of outer scale row brown, and the same color on extreme outer edge of ventrals, a second row of white dots begins on second row of scales, but only continues a very short distance, head brown with very dim dark spots; upper labials yellowish on their lower parts, lower labials with brown spots, mental and anterior parts of first chin shields dark; belly immaculate canary, underside of tail yellow with a median dark brown line

Measurements of Calamaria suluensis sp nov

	mm
Total length	266
Snout to vent	239
Tail	27
Length of head	8
Width of head	5

Remarks.—This species is related to *Calamaria gervaisii* Duméril and Bibron, but differs from it in coloration and marking, and in having a longer tail with a higher number of subcaudals The average number of subcaudals for *C. gervaisii* is about 17 for males and 13 for females In the type of *C. suluensis*, an adult female, there are 25 subcaudals, nearly double the number for females of *C. gervaisii*. The length of the tail of the females of *C. gervaisii* is contained in the total length twenty times, of the males, fourteen times In *C. suluensis* the length of the tail is contained in the total length nine and a half times; also, the head is slightly longer, and the second pair of chin shields is longer than in *C. gervaisii*

The type was collected under a log near one of the lakes on the small isolated island Cagayan Sulu, in the southern part of Sulu Sea

CALAMARIA MINDORENSIS Boulenger

Calamaria mindorensis BOULENGER, Ann & Mag Nat Hist VI 16 (1895) 481, Cat Snakes Brit Mus 3 (1896) 646 (addenda), GRIFFIN, Philip Journ Sci § D 6 (1911) 262

Description of species.—(From Boulenger, Catalogue.) "Rostral a little broader than deep, visible from above, frontal longer than broad, twice as broad as the supraocular, shorter than the parietals; a præ- and a postocular, diameter of the eye equal to its distance from the mouth, five upper labials, third and fourth entering the eye, symphysial in contact with the anterior chin-shields, two pairs of chin-shields in contact with each

other Scales in 13 rows. Ventrals 193, anal entire, subcaudals 15 Brown above, with longitudinal series of black dots, a yellow spot on each side of the neck; a white spot on each scale of the outer row, upper lip and lower parts yellowish; a black spot at the outer end of each ventral, a black line along the middle of the tail."

Measurements of Calamaria mindorensis Boulenger

	mm
Total length	240
Snout to vent	227
Tail	13

Remarks—The type of this species, an adult female, was collected in Mindoro by A Everett Only the type appears to have been discovered

The new species of *Calamaria* herein described, *Calamaria tropica*, is from Mindoro but differs from *C mindorensis* in the presence of a loreal, and a dark brown neck band followed by a yellow band; a difference of 45 ventrals is also evident

CALAMARIA EVERETTI Boulenger

PLATE 24, FIGS 5 TO 9

Calamaria everetti BOULENGER, Proc Zool Soc London (1893) 525, Ann & Mag Nat Hist VI 14 (1894) 84, Cat Snakes Brit Mus 2 (1894) 340, pl 18, figs 1, 2, GRIFFIN, Philip Journ Sci § A 4 (1909) 599, § D 6 (1911) 262

Description of species—(From No 565, Bureau of Science collection, collected at Iwahig, Palawan, March, 1909, by C M Weber) (Adult male) Rostral distinctly broader than high, rather narrowly visible from above, internasals wanting, prefrontals large, bordering labials laterally; frontal one and a half times as long as broad, slightly shorter than parietals, less than twice as broad as supraocular, latter much shorter than frontal, parietals elongate, broader than long, nostril pierced in nasal, small, no loreal present, an elongate preocular, broader inferiorly, 1 small, distinct preocular; no anterior temporals, a large posterior temporal bordering parietal, 5 upper labials, third and fourth entering eye, fifth very large; 5 lower labials, first pair meeting behind mental, 3 touching anterior chin shields, latter followed by a second, smaller, pair of chin shields, in contact with each other, scales in 13 rows, smooth, ventrals, 177, anal single,

FIG 17 *Calamaria everetti* Boulenger after Boulenger head lateral view

subcaudals, 24 pairs, head rather elongate; eye rather large, its diameter much more than its distance from mouth

Color in alcohol—Above blackish brown with irregular rows of black dots, a continuous line of white dots covering outer row of scales; edges of ventral scales black, forming a zigzag black line below the white dotted line; another black line immediately above the lateral white line on second scale row, a white line from snout along upper labials, covering them save for their upper parts; top of head lighter brown with some darker mottling, particularly on outer edge of parietals; two whitish collars, one immediately behind parietals, and the other five scales back, neither crossing entirely the dorsal surface of neck; a distinct dark spot on fifth labial and a posterior temporal spot; below, chin, neck, belly, and underside of tail immaculate yellwish

Measurements of Calamaria everetti Boulenger

	mm
Total length	315
Snout to vent	289
Length of head	8
Width of head	5 5

Variation—A second specimen from the same locality agrees well in scalation. The lateral white line is very irregular, as many scales in the second row are white. Boulenger * lists three varieties of this species (only two of which are Philippine), as follows.

A Nape dark brown, with a yellow collar, belly unspotted
B No collar, belly unspotted
C No collar, a series of black dots along the middle of belly

TABLE 37.—*Measurements and scale counts of Calamaria everetti Boulenger*

No.	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Collection
				mm	mm			
565	Iwahig, Palawan	C. M. Weber	♂	315	26	177	24	Bureau of Science
952	...do...	C. H. Lamb	♂	295	24	181	23	Do

The first variety (A), a young specimen from Sarawak, Borneo, is the type. The second and third varieties (B and C) are from Palawan. The known ventral range is 144 to 184,

* Loc. cit.

the subcaudal, 16 to 23, the low ventral count, 144, is from the Sarawak specimen In the Palawan specimens the average count is 179 for ventrals. The variations in color may be due to the age of the specimens.

Remarks.—Griffin* has called attention to the fact that the Bureau of Science specimens differ in color and markings from those listed by Boulenger. Larger series of specimens may show constant variations which merit specific designation for these varieties.

CALAMARIA MEARNSI Stejneger

Calamaria mearnsi STEJNEGER, Smith Misc Coll 50 (1908) 30, GRIFFIN, Philip Journ Sci § D 6 (1911) 262

Description of species.—(After the type description) Rostral well visible from above; frontal slightly longer than broad, more than twice as broad as supraoculars, shorter than parietals; 1 preocular, 1 postocular, diameter of eye less than half its distance from edge of mouth; 5 supralabials, third and fourth entering eye, 2 pairs of chin shields, in contact with each other, mental separated from chin shields by first pair of lower labials, scales in 13 rows; ventrals 251, anal entire, subcaudals 12 pairs; tip of tail rounded

Color in alcohol.—Dark brown above, each of the two outer scale rows broadly tipped with pale yellowish; parietals and prefrontals with pale yellowish markings, a pale yellowish collar, about two scales wide, seven scale rows behind head; a pair of large pale spots on sides at base of tail; tip of tail pale, except extreme point which is dark; underside uniform pale with ends of ventrals like back, a dark brown line along middle of underside of tail

Measurements of Calamaria mearnsi Stejneger

	mm
Total length	270
Snout to vent	262
Tail	8

Remarks.—This species is known only from the type. It was collected in Tangob, northern Mindanao, June 10, 1906, by Maj. E. A Mearns

Stejneger remarks "This species is apparently most closely allied to *Calamaria everetti* and the *C pavimenta* group, but differs from the latter in the number of supralabials, and from both in the much smaller eye, the large number of ventrals dis-

* Loc cit

tinguishes it at once not only from these Calamarians but from all other species known from the Philippines and in fact from most of the species of the genus *C. gracilima* from Borneo, exceeds it in having 300 and more ventrals, but it lacks preocular and has no distinct postocular *C collaris*, from Celebes, has from 232 to 265 ventrals but has a much larger eye, and a very different style of coloration"

CALAMARIA TROPICA sp nov

Type—No 887, E. H. Taylor collection, collected on the low coastal mountains near Naujan, Mindoro, May 2, 1916, by E H. Taylor

Description of type—(Juv) Rostral about as high as broad, well visible above; prefrontals large, not entering eye, laterally in contact with first and second labials, their mutual suture scarcely longer than suture with frontal, latter one and a half times as long as broad, longer than its distance from end of snout, slightly shorter than parietals, more than twice as long and twice as wide as supraoculars; parietals much longer than wide, in contact with postocular and fifth labial; nostril pierced in a minute nasal, a small triangular loreal present, touching second and third labials, a single narrow preocular; postocular a little higher than wide, no anterior temporals, 6 labials, third and fourth entering orbit, fifth largest, mental moderate, not as wide as rostral, in contact with 2 large anterior chin shields, which are nearly twice the length of second pair, second pair of chin shields forming a mutual suture nearly half their length, 5 lower labials, the 3 anterior touching first chin shields, scales in 13 smooth rows, anal single, ventrals 150; subcaudals 19, body cylindrical; tail ending in a blunt point, eye wider than its distance to mouth

Color in life—Iridescent brown with numerous irregular dark dots; a more or less regular series of yellowish cream dots on outer row of scales, and another, less distinct, on third row, neck with a dark brown bar five scales wide, with a yellow-cream bar one or two scales wide behind it which unites with the yellow-cream ventral color, top of head same as ground color of back with numerous dots and flecks of darker; a yellow-cream irregular line on prefrontal, dark color on upper head, on rostral and upper parts of labials, a very small dark area on upper anterior part of fifth labial, the yellow-cream color on sides tails to meet medially to form a collar in front of dark nuchal bar, chin and belly immaculate; a dark line crosses outer edges of ventrals, a median subcaudal dark line

Measurements of Calamaria tropica sp nov

	mm
Total length	101
Snout to vent	93
Tail	8

Remarks.—The species is based on a single specimen, the type. The presence of the loreal clearly differentiates it from all other species of *Calamaria* The unique specimen was collected from under leaves along a forest path on the eastern Mindoro coast

SLIGHTLY POISONOUS SNAKES

BOIGINÆ

Hypapophyses absent in posterior part of vetebral column, nostrils lateral, not valvular; posterior maxillary teeth grooved; somewhat poisonous, but not dangerous to man

Five genera of the Boiginæ are known in the Philippines and are distinguished as follows

Key to the Philippine genera of the Boiginæ

a^1	Ventral scales rounded, not keeled or notched, pupil vertically elliptic	
b^1	Scales with apical pits, head very distinct from neck	Boiga Fitzinger (p 195)
b^2	Scales with apical pits, head not strongly distinct from neck	Psammodynastes Gunther (p 209)
a^2	Ventral scales strongly keeled and notched, scales with apical pits	
b^1	Pupil horizontal	Dryophiops Boulenger (p 213)
b^2	Pupil round	Chrysopelea Boie (p 215)
b^3	Pupil vertically elliptic	Dryophis Dalman (p 218)

Genus BOIGA Fitzinger

Hurria, part, Daudin, Rept 5 (1803) 275

Boiga, part Fitzinger, Neue Class Rept (1826) 29-31

Dipsas, part, Boie, Isis (1827) 548, Schlegel, Phys Serp 2 (1837) 257, Gunther, Cat Col Snakes (1858) 169, Jan, Elenco Syst. Ofid (1863) 103, Gunther, Rept Brit India (1864) 307

Dipsadomorphus Fitzinger, in Tschudi, Faun Per, Herp (1845) 55, Syst Rept (1843) 27, Boulenger Cat Snakes Brit Mus 3 (1896) 59

Macrocephalus Fitzinger, Syst Rept (1843) 27

Gonyodipsas Fitzinger, Syst Rept (1843) 27

Eudipsas Fitzinger, Syst Rept (1843) 27

Cephalophis Fitzinger, Syst Rept (1843) 27

Opetiodon Duméril and Bibron, Mem Ac Sci 23 (1853) 491, Erp Gén 7 (1854) 905, Duméril, Prodr Class Ophid (1853) 98

Triglyphodon Duméril and Bibron, Mem Ac Sci 23 (1853) 507, Duméril, Prodr Class Ophid (1853) 110

Toxicodryas Hallowell, Proc Ac Philadelphia (1857) 60

Boiga COPE, Proc Acad Nat Sci Philadelphia (1860) 264, STEJNEGER, Proc Biol Soc Washington 15 (1902) 16, BARBOUR, Mem Mus Comp Zool Harv Coll 44 (1912) 126.
Pappophis MACLEAY, Proc Linn Soc N S. W 2 (1877) 39
Dipsas BOULENGER, Fauna Brit India, Rept (1890) 357
Liophallus COPE, Proc Acad Nat Sci Philadelphia (1894) 427

"Maxillary teeth 10 to 14, subequal in size, followed by two or three enlarged, grooved fangs, anterior mandibular teeth longest. Head very distinct from neck, eye moderate or large, with vertically elliptic pupil, posterior nasal more or less deeply concave. Body more or less compressed; scales smooth, more or less oblique, with apical pits, in 17 to 31 rows, the vertebral row more or less enlarged, ventrals obtusely angulate laterally. Tail moderate or long, subcaudals in two rows" (*Boulenger.*)

The genus is distributed through tropical Africa, southern China, Malay Archipelago, Papuasia, Australia, and Philippines.

Key to the Philippine species of Boiga Fitzinger *

a^1 Anterior palatine teeth but slightly enlarged
  b^1 Snout longer than diameter of eye, scales in 21 rows, body with numerous black and yellow bars B dendrophila (Boie) (p 197)
  b^2 Snout as long as eye, scales in 19 rows, grayish or yellowish brown, with brown spots and crossbars, the latter extending across belly B angulata (Peters) (p 204)
a^2. Anterior palatine teeth strongly enlarged
  b^1 Scales in 19 rows, brownish yellow above with black crossbars B philippina (Peters) (p 206)
  b^2 Scales in 23 to 25 rows, head large, body brownish, barred with black or uniform tawn color without trace of markings B cynodon (Boie) (p 206)

These snakes are arboreal in habit and, with the exception of the first, rare. The large size of the eyes suggests their nocturnal habits. They prey largely on warm-blooded animals, such as birds and small mammals. The body is elongate, compressed, and the neck is usually slender. *Boiga angulata* and *B philippina* are restricted to the Philippines, *B dendrophila* and *B cynodon* are widely distributed.

These snakes have two or three grooved fangs in the posterior part of the maxillæ. This indicates that they are equipped with poison which probably would prove deadly only to birds and small mammals. There is no record to show that they are deadly to man, and it is almost certain that they are not

* Casto de Elera, Cat Fauna Filipinas 1 (1895) 146, lists *B drapezii* Boie and *B fusca* Gray from the Philippines, and two unidentified species. The records of the first two are erroneous.

The names *Aguason* and *Agnasan* are applied to *Boiga dendrophila* in the Bicol provinces In Dapitan it is called *Lilusan*. *Boiga cynodon* is frequently confused with the young pythons by various Mindanao peoples.

BOIGA DENDROPHILA (Boie)

Dipsas dendrophila Boie, Isis (1827) 549, Wagler, Icon Amph (1828) pl 8, Syst Amph (1830) 181, Schlegel, Phys Serp 2 (1837), 263, pl 11, figs 1–3, Abbild (1844) 133, pl 45, figs 1–9, Cantor, Cat Mal Rept (1847) 76, Motley and Dillwyn, Contr Nat Hist Lab (1855) 47, Gunther, Cat Col Snakes (1858), 169, Rept Brit India (1864) 310, Proc Zool Soc London (1879) 78 Jan, Icon Gén (1871) 38, pl 4, fig 2

Dipsas (Dipsas) dendrophila Fischer, Jahrb wiss Anst Hamburg 2 (1885) 81, Boettger, Ber Senck Nat Ges (1886) 113

Triglyphodon dendrophilum Duméril and Bibron, Erp Gén 7 (1854) 1086

Triglyphodon gemmicinctum Duméril and Bibron, Erp Gén 7 (1854) 1091

Boiga dendrophila Cope, Proc Acad Nat Sci Philadelphia (1860) 264, Griffin, Philip Journ Sci § D 5 (1910) 214, § D 6 (1911) 263, Barbour, Mem Mus Comp Zool Harv Coll 44 (1912) 125

Dipsas (Triglyphodon) gemmicincta Peters, Mon Berl Ak (1861), 688

Dipsadomorphus dendrophilus (and varieties) Boulenger Cat Snakes Brit Mus 3 (1896) 70 and 71

This widely distributed species, which occurs from the Malay Peninsula throughout the East Indian Archipelago, goes through a large number of variations, several of which merit subspecific designation Boulenger lists seven varieties in his Catalogue, namely, *dendrophila* Boie, *melanotus* Bleeker, *annectens* Boulenger, *regularis* Boulenger, *multicinctus* Boulenger, *gemmicinctus* Duméril and Bibron, and *latifasciatus* Boulenger

Of these varieties only *dendrophila multicincta* Boulenger and *dendrophila latifasciata* Boulenger occur in the Philippines, the former appear to be confined to Palawan, the latter to Mindanao and Samar A third form, occurring in Luzon and Samar(?), differs very markedly from *B dendrophila latifasciata* and probably a little less so from the Palawan form I propose to give this the subspecific designation *B dendrophila divergens* subsp nov

Key to the Philippine subspecies of Boiga dendrophila (Boie)

a' 50 to 58 broad, greenish yellow bands about body and tail, ground color dark black, each scale in the yellow bands edged with black, ventrals, 207 to 222, subcaudals, 93 to 101 Mindanao and Samar
B d latifasciata (Boulenger) (p 198).

a' 90 to 110 narrow, yellow bars on body and tail, ground color dark black, ventrals, 220 to 240, subcaudals, 105 to 115
B d multicincta (Boulenger) (p 200)

a' 81 to 97 narrow, grayish white bars, ground color dull black washed with gray, young, brownish with a yellow line defining the temporal region Ventrals, 219 to 228, subcaudals, 80 to 87 Luzon, Samar, Polillo B d divergens subsp nov (p 201)

BOIGA DENDROPHILA LATIFASCIATA (Boulenger)

Dipsadomorphus dendrophilus var *latifasciatus* BOULENGER, Cat Snakes Brit Mus 3 (1896) 71

Description of subspecies —(From No 18, E. H Taylor collection, collected at Bunawan, Agusan, Mindanao, October 10, 1912, by E H Taylor) (Adult male) Head short and blunt, much widened in parietal region, very distinct from neck, rostral somewhat wider than deep, barely visible from above, its sutures with internasals and nasals subequal; internasals broader than long, not touching loreal, little shorter than prefrontals, latter broader than long, in contact with loreal and nasal, forming their smallest sutures with the former, frontal seven-eighths as wide as long, broader than supraoculars but of equal length, as long as or a little longer than its distance from end of snout, its anterior suture a continuous straight line, parietals large, much longer than wide, their width equaling length of frontal, a slightly enlarged transverse row of scales bordering labials, temporals, and parietals posteriorly, nostril large, between 2 nasals; loreal small, triangular, longer than wide, not entering eye; preocular large, widely separated from frontal, visible from above, supraocular little longer than wide, 2 postoculars, inferior largest, temporals 2 + 3 (on the right side the lower is crowded back somewhat, and only 1 temporal touches postoculars), 8 upper labials, third, fourth, and fifth entering eye, seventh largest, sixth on right side is broken horizontally; mental twice as wide as deep, 10 lower labials, 4 in contact with anterior chin shields which are much longer and broader than second pair, a small, third pair of chin shields, eye large, its diameter equal to its distance from anterior border of nostril, ventrals, 210, anal single, subcaudals, 98 pairs, body much compressed

Color in life —Coal black above with 60 greenish yellow bands around body, each yellow scale bordered with black, the bands crossing belly usually the width of three ventrals; about 16 of these bands belong to tail and do not extend entirely across ventral surface; on posterior part of body they do not cross entirely, first 24 ventrals on neck yellow, narrowly edged with

black; upper and lower labials and scales under head yellow edged with black Top of head black; 1 or 2 yellow spots on parietals, and posterior to and in front of eye are other spots of yellow.

Measurements of Boiga dendrophila latifasciata (Boulenger)

	mm
Total length	1,215
Snout to vent	962
Tail	253
Width of head	23
Length of head	31

Variation.—The known range of ventrals in this subspecies is 207 to 222; of subcaudals, 93 to 101 In three specimens the loreal is absent, in no case is the loreal found entering eye This subspecies usually has 3 pairs of chin shields Only one

TABLE 38.—*Measurements and scale counts of Boiga dendrophila latifasciata (Boulenger).*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals	Subcaudals	Anals
				mm	mm			
18	Bunawan, Agusan	E H Taylor	♂	1 215	253	210	98	1
19	do	do	♀	708	137	207	93	1
20	do	do	♂	1 020	217	211	97	1
21	do	do	♀	960	206	218	101	1
22	do	do	Yg	650	125	213	101	1
	Mindanao		♀			210	94	1
1727	Bunawan, Agusan	E H Taylor	Yg					1

No	Chin shields	Preoculars	Postoculars	Upper labials	Labials enter eye	Lower labials	Loreals	Loreal enters eye	Temporals	Scale rows	Collection
	Pairs										
18	3	1	2	8	3,4,5	10	1	0	2+3	21	E H Taylor
19	2	1	2	8	3,4,5	10	1	0	2+3	21	Do
20	3	1	2	8	3,4,5	10–11	1	0	2+3	21	Do
21	3	1	2	8	3,4,5	10	0	0	2+3	21	Do
22	2	1	2	8	3,4,5	10	1	0	2+3	21	Do
------	3	1	2	8	3,4,5	10	0	0	2 3	21	Santo Tomas
1727	3	1	2	8	3,4,5	11	0	0	2+3	21	Bureau of Science

specimen, the one described, shows the tendency of the sixth and seventh upper labials to break, in the other subspecies this tendency is very pronounced

Remarks.—This subspecies is common at Bunawan, Agusan, Mindanao. A number of specimens taken were lost, and many

seen were not taken The snake was always found in low brush and trees, invariably away from the ground. It makes no or very little effort to fight One specimen taken had just eaten a bat This subspecies is probably confined to Mindanao and the near-by islands Samar apparently has two forms of the species. Boettger reports a specimen of *Boiga dendrophila latifasciata* from there, and there is a specimen of *B. dendrophila divergens* in the Santo Tomás Museum presumably from Samar

BOIGA DENDROPHILA MULTICINCTA (Boulenger)

PLATE 25, PLATE 26, FIGS 4 TO 6

Dipsadomorphus dendrophilus var *multicinctus* BOULENGER, Cat Snakes Brit Mus 3 (1896) 71

Boiga dendrophila multicincta BARBOUR, Mem Mus Comp Zool Harvard Coll 44 (1912) 125

Description of subspecies.—Similar to *Boiga dendrophila latifasciata*, but with a higher number of ventrals and subcaudals; ventrals vary between 220 and 240, the average being 231, subcaudals vary between 105 and 115, the average being 111, there are 11 instead of 10 lower labials; there is a decided tendency for the seventh labial to break horizontally, thus in eight of the thirteen specimens examined this division has occurred, there are only 2 pairs of chin shields present, and the number of labials touching the first pair is 4 or 5. One specimen has the loreal entering the eye below the preocular.* The temporal elements frequently assume the position represented by the formula $\frac{2}{1}+3$

Color.—Body above black with a large series of narrow yellowish to yellowish white bars on body and tail; the number of bars varies from 93 to 111, the average being 106, these light bars are seldom more than 1 scale wide

Measurements of Boiga dendrophila multicincta (Boulenger), No 906, Bureau of Science collection

	mm
Total length	1,160
Snout to vent	900
Tail	260

Remarks.—This subspecies is common in Palawan and in Balabac, I obtained the specimens in my own collection from the latter locality These do not differ from those found on the Palawan mainland.

* Boulenger records this same anomaly on a specimen in the British Museum, op cit 70

TABLE 39.—*Measurements and scale counts of Boiga dendrophila multicincta (Boulenger)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Anals	Chin shields	Preoculars
				mm	*mm*				*prs*	
7	Iwahig, Palawan	W Schultze	♀	1,360	290	228	105	1	2	1
568	do	C M Weber	♀	1,410	325	231	113	1	2	1
656	do	do	♂	1,350	280	220	113	1	2	1
676	do	do	♀	1,120	250	237	113	1	2	1
701	do	do	♀	1,040	215	237	113	1	2	1
906	do	C H Lamb	♀	1,160	260	229	113	1	2	1
917	do	do	♂	1,102	250	229	113	1	2	1
918	do	do	♀	1 400	255	240	106	1	2	1
919	do	do	♀	1 400	290	231	111	1	2	1
1367	do	P Gilman	♂	680	146	233	115	1	2	1
1338	do	C Canonizado	♂	1 270	300	221	111	1	2	1

No	Postoculars	Upper labials	Labials enter eye	Lower labials	Labials touch chin shields	Loreals	Loreal enters eye	Temporals	Scale rows	Yellow bars	Collection
7	2	8	3,4,5	11	5	1	No	$\left\{\frac{2}{1}+3\right\}$	21	104	Bureau of Science
568	2	8	3 4 5	11	5	1	No	2+3	21	103	Do
656	2	8	3 4 5	10-11	4	1	No	$\left\{\frac{2+3}{2+2}\right\}$	21	104	Do
676	2	8	3 4 5	11	5	1	No	$\left\{\frac{2}{1}+2\right\}$	21	111	Do
701	2	8	3 4 5	11	4	1	No	$\left\{\frac{2}{1}+3\right\}$	21	100	Do
906	2	8	3 4 5	10 11	4	1	No	2+3	21	111	Do
917	2	8	3 4 5	11	5	1	No	2+3	21	110	Do
918	2	8-9	$\left\{\begin{matrix}3 & 4 & 5\\ 4 & 5 & 6\end{matrix}\right\}$	11-11	5	1	No	3+3	21	111	Do
919	2	8-9	3 4 5	11-11	5	1	No	$\left\{\frac{2}{1}+3\right\}$	21	109	Do
1367	2	8	3,4,5	11	4	1	Yes	2+3	21	110	Do
1338	2	8	3 4 5	11	5	1	No	2+3	21	93	Do

BOIGA DENDROPHILA DIVERGENS subsp nov

Type.—No 186, E H Taylor collection, collected on Mount Maquiling, Laguna, Luzon, November 12, 1913, by E H. Taylor.

Description of type.—Head large, blunt, double the width of neck; rostral a little wider than high, forming its smallest sutures with first labials; internasals rather small, about half as large as prefrontals; latter forming their smallest suture with loreal, their longest with frontal, their mutual suture deep, frontal with anterior suture forming a straight line, sides round-

ing instead of angular; wider than supraocular and about the same length, parietals large, longer than wide, very much larger than frontal, in contact laterally with one temporal and upper postocular, supraoculars much wider behind than anteriorly, broadly in contact with prefrontals, nasal divided, the anterior part quadrangular, lower than posterior, nostril large, loreal small, narrowly entering eye below preocular, touching 2 labials; preocular higher than wide, eye large, equal to its distance from middle of nostril; 2 postoculars, upper slightly the larger; temporals, 2 + 2, 8 upper labials, third, fourth, and fifth broadly entering orbit, labials in the following order of size, seventh, sixth, eighth, fifth, third, fourth, second, first; mental small, as wide as rostral, 10 lower labials, 5 touching anterior chin shields, which are double the size of second pair, third pair of chin shields small, mental groove very deep, scales in 21 rows around body, ventrals, 228, anal single; subcaudals, 80 pairs

Color in life.—Above bluish, the larger part of the scales with a wash of light gray-ultramarine, more pronounced on posterior part of body; back with 63 narrow, bluish white, transverse bands extending to edges of ventrals where they widen slightly and are more yellowish in color on belly, tail with 16 bands, yellowish dots on supraoculars and prefrontals, a row of bluish white dots outlines the posterior temporal region, upper and lower labials each with a large yellowish white area enclosed with black, except on border of mouth; lateral head scales with light spots, anterior ventrals and chin scales yellowish edged with black

Measurements of Boiga dendrophila divergens subsp. nov.

	mm
Total length	1,370
Snout to vent	1,114
Tail	256
Width of head	27
Length of head	35

Variation.—Two specimens in the Bureau of Science collection from Polillo[*] show the following variations from the type. The loreal in both specimens is smaller and does not enter eye, the temporal formula of one is 2 + 3 and $\frac{2}{1}$ + 3 and of the other, 2 + 3, in one specimen there are four labials touching the first chin shields, in the other (a young one) five; the ground color is brown, darker on anterior part of body, the transverse

[*] Griffin, Philip Journ. Sci. § D 5 (1910) 214

bars are yellowish white and encircle body on anterior part; belly grayish brown; there are yellow spots on all the head scales except frontal, those in front of eye prominent; a line begins on eye and runs along edge of parietal and around temporal region to labials; two small posterior branches run a short distance on neck There is a specimen in the Santo Tomás Museum, presumably from Samar

Remarks.—This subspecies is probably more closely related to the Palawan *Boiga dendrophila multicincta* than to the Mindanao *B. dendrophila latitasciata* The number of ventrals varies between 219 and 228; of subcaudals, between 80 and 87, the ventrals average 223, 8 less than in *B dendrophila multicincta*, and the subcaudals average 83, which is 28 less than in *B. dendrophila multicincta;* 10 is the usual number of lower labials. None of the specimens examined shows the seventh labial broken The difference in color, the markings in the temporal region, and the smaller number of subcaudals suffice to distinguish this form from the other two Philippine subspecies

TABLE 40.—*Measurements and scale counts of Boiga dendrophila divergens subsp nov*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals	Subcaudals	Anals	Preoculars	Loreal enters eye
				mm	mm					
186	Lagura	E H Taylor	♀	1,370	256	228	80	1	1	Yes
805	Polillo	C Canonizado	♂	1 128	a 140	223	a 87	1	1	No
806	do	do	yg	876	74	223	87	2	1	No
------	Samar	----	♂	------	-----	222	a 84	1	1	Yes
------	Manila	------	♂	----	--	219	(a)	1	1	No

No	Labials				Temporals	Scale rows	White bars	Collection
	Upper	Lower	Enter eye	Touch chin shields				
186	8	10	3 4 5	5	2+2	21	79	E H Taylor
805	8	10	3, 4, 5	4	2/1+3	21	a 88	Bureau of Science
806	8	10	3, 4 5	5	2+3 / 2+3	21	98	Do
------	8	11/10	3 4 5	4	2+3	21	93	Santo Tomás
------	8	10	3, 4 5	5	2+3	21	86	Do

a Tail mutilated

BOIGA ANGULATA (Peters)

PLATE 26, FIGS 1 TO 3, PLATE 27

Dipsas (Dipsadomorphus) angulata PETERS, Mon Berl Ak (1861) 688, BOETTGER, Ber Senck Nat Ges (1886) 113, (1892) XLIX
*Dipsas (Eudipsas) guttatus** STEINDACHNER, Novara, Rept (1867) 75, pl 3, figs 9, 10, BOETTGER, Ber Senck Nat Ges (1886) 113, F MULLER, III Nacht Cat Herp Samml Basel Mus (1883) 18, FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 81
Dipsadomorphus angulatus BOULENGER, Cat Snakes Brit Mus 3 (1896) 75
Boiga angulata GRIFFIN, Philip Journ Sci § D 5 (1910) 213, § D 6 (1911) 263, TAYLOR, Philip Journ Sci § D 12 (1917) 366

Description of species.—(From No. 271, Bureau of Science collection, collected on Mount Marapara, Occidental Negros, September, 1909, elevation, 715 meters, by F W. Foxworthy.) (Adult male.) Head short, rather thick, but little longer than wide, supraocular region prominent, diameter of eye minutely shorter than its distance from end of snout; rostral distinctly broader than high, scarcely visible from above, forming its longest suture with nasal, internasals small, their surface rounding, truncate anteriorly, broader than long, prefrontals broader than long, with a distinct depression at posterior end of their common suture; frontal as long as wide, slightly shorter than its distance from end of snout, a little wider than supraoculars, not in contact with preocular, its anterior suture forming a straight line, parietals slightly longer than broad, a little longer than frontal, in contact with 1 postocular, their edges irregular, nasal large, followed by a very small loreal, higher than wide, 1 preocular, elongate, wider at top than bottom, 2 postoculars, upper largest; temporals 2 + 2, the upper anterior touching both postoculars, 8 upper labials, third, fourth, and fifth entering eye, mental as wide as rostral, very short, 10 lower labials, 5 touching first chin shields, which are much longer and wider than posterior pair, scales in 19 rows, smooth, distinctly angular on body, with the median row enlarged, median laterals very small; scales on neck much elongate, narrow, and pointed, ventrals, 267, anal single, subcaudals, 152, body very slender, compressed, neck very long, extremely narrow, less than one-third the width of head.

Color in alcohol.—Above a light yellow brown, with a large series of dim, darker brown, transverse bands or blotches which widen laterally and are discernible on belly; a series of large lighter spots along edges of ventrals, belly strongly marked with

* I follow Boulenger in regarding this a synonym of *Boiga angulata*

darker, elongate, brown spots, arranged in two broken lines on ventrals, head brownish flecked with darker, upper labials light, throat and chin muddy white.

Measurements of Boiga angulata (Peters)

	mm.
Length	1,477
Snout to vent	1,107
Tail	370
Length of head	18
Width of head	15

Variation.—A second specimen from Polillo * is at hand It agrees very well in scalation with the one described The bars on body and the ground color above are darker; below there are fewer dark spots, and no traces of the dark line noted in the described specimen. The frontal in the second specimen is as long as or a little longer than its distance from end of snout The known ventral range of the species is from 254 to 267; subcaudal

TABLE 41.—*Measurements and scale counts of Boiga angulata (Peters)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Anals	Upper labials
				mm.	mm.				
271	Negros	F W Foxworthy	♂	1,477	370	267	152	1	8
[a]789	Polillo	C Canonizado	♀	1,106	260	260	[a]120	1	8
-------	Los Baños	Unknown	♂	1,005	275	263	147	1	8
(b)	Leyte	F Jagor	-----	1 015	240	254	126	1	8

No	Labials enter eye	Lower labials	Labials touch chin shields	Preocular	Postoculars	Temporals	Scale rows	Collection
271	3, 4, 5	10	5	1	2	2 | 2	19	Bureau of Science
[a]789	3 4 5	10–11	6	1	2	2 | 2	19	Do
------	3, 4, 5	10	5	1	2	2+1+3	19	College of Agriculture
(b)	3, 4, 5	-------	-----	1	2	- - -	19	Berlin [b]

[a] Tail slightly mutilated and part missing
[b] Type, data from Peters, Mon Berl Ak (1861) 688

range, from 126 to 152 The type is said to have a divided nasal. In the specimen I have described the nasal has a slight depression or suture partly dividing it, the second specimen shows no suture or depression

* Griffin, Philip Journ Sci § D 5 (1910) 214, makes note of the variation of this specimen, and records the fact that the stomach contained a large *Calotes*

The type is from Leyte, collected by F. Jagor Specimens have been taken also in Polillo, Negros, and Catanduanes.

BOIGA PHILIPPINA (Peters)

Dipsas philippina PETERS, Mon Berl Ak (1867) 27, BOETTGER, Ber Senck Nat Ges (1886) 113
Dipsadomorphus philippinus BOULENGER, Cat Snakes Brit Mus 3 (1896) 77
Boiga philippina GRIFFIN, Philip Journ Sci § D 6 (1911) 263

Description of species.—(After the type description.) Anterior palatine and mandibular teeth strongly enlarged; head very broad, neck narrow; rostral broader than deep, just visible from above, internasals broader than long, much shorter than prefrontals, frontal as long as broad, or a little longer, as long as its distance from rostral, loreal about as long as deep, 2 preoculars, upper in contact or nearly in contact with frontal; 2 postoculars, temporals variable, 8 upper labials, third, fourth, and fifth entering eye; 12 lower labials, scales in 19 rows, vertebral row hexagonal and strongly enlarged, ventrals, 240, anal divided, subcaudals, 133

Color.—Brownish yellow above, with black crosslines, head spotted with black, but no temporal streak present

Measurements of Boiga philippina (Peters)

	mm
Total length	690
Snout to vent	535
Tail	155
Head length	20

Remarks.—I have been unable to obtain a specimen of this rare reptile. The type locality is "Ylaces,* Northwest Luzon," collected by Semper. It is known only from the type.

BOIGA CYNODON (Boie)

Dipsas cynodon BOIE, Isis (1827) 559, GUERIN, Icon Reg Anim Rept (1829) pl 21, fig 2, SCHLEGEL, Phys Serp 2 (1837) 268, pl 11, figs 10 and 11, GUNTHER, Rept Brit India (1864) 308, JAN, Icon Gén (1871) 38, pl 6, fig 1, SCLATER, Journ As Soc Bengal 60 (1891) 244, BOETTGER, Abh Mus Dresden No 7 (1894–95) 1
Dipsas cynodon, part, CANTOR, Cat Mal Rept (1847) 77
Opetiodon cynodon DUMERIL and BIBRON, Erp Gén 7 (1854) 907
Eudipsas cynodon GUNTHER, Cat Col Snakes (1858) 168
Pareas waandersii BLEEKER, Nat Tijds Nederl Ind 21 (1860) 471
Dipsas (Eudipsas) cynodon BOETTGER, Ber Senck Nat Ges (1886) 113, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 435

* Probably a misspelling of Ilocos (or Ylocos as the name was formerly spelled), a province in Luzon

Dipsadomorphus cynodon BOULENGER, Cat Snakes Brit Mus 3 (1896) 78

Boiga cynodon GRIFFIN, Philip Journ Sci § A 4 (1909) 599, § D 5 (1910) 213, § D 6 (1911) 264

Description of species.—(From No 88, Bureau of Science collection; collected at Iwahig, Palawan, March, 1909, by W Schultze.) (Adult male.) Anterior palatine and mandibular teeth very strongly enlarged; head large, distinct from neck; rostral scarcely visible above, broader than deep, forming its longest suture with nasal, its shortest with first labial; internasals broader than long, curving downward on sides, rather narrowed in front, their mutual suture little more than half that between prefrontals, latter very much larger than internasals, forming their shortest sutures with nasals and supraoculars, broader than long, a little shorter than frontal; latter about five-sixths as wide as long, shorter than its distance from rostral, little wider than supraoculars, parietals very little longer than wide, in contact with upper postocular, nasal divided, nostril large, loreal present, longer than high, preocular single, very high, visible above, touching only fourth labial below; 2 postoculars, subequal in size, temporals 3 + 2; 9 upper labials, fourth, fifth, and sixth entering eye, eighth largest, mental much broader than deep, 13 and 14 lower labials, 5 touching anterior chin shields which are much smaller than second pair, 5 labials touching second pair of chin shields; scales with apical pits, in 23 rows around body, the outer ventral row strongly enlarged, ventrals 268, anal single; subcaudals 149; eye very large, its diameter about equal to its distance from nostril, body very strongly compressed, neck long and slender.

Color in alcohol.—Above yellowish to dark brown with about 44 more or less distinct transverse bands on body, and about 35 on tail where they are wider and are separated by only a very narrow interspace, bars distinct on neck, head dark brown without spots; a distinct black line from eye to angle of jaw; below, immaculate on chin, throat, and belly; muddy under tail.

Measurements of Boiga cynodon (Boie)

	mm
Total length	1,915
Snout to vent	1,450
Tail	465
Width of head	22
Length of head	36
Width of neck	10
Width of body	15

Variation.—A second specimen (No 89) in the collection of the Bureau of Science agrees with the described form in scala-

tion, and is almost identical in color and markings A third specimen, in my own collection, differs from the described form as follows In my specimen the black blotches are very much wider inclosing elongate grayish spots ventrally, about 28 on body and about an equal number on tail. Head has 2 small spots on frontal and another spot on each parietal, the black line behind eye is present Below, body is muddy yellow with a series of irregular black blotches along both sides of ventrals, below, tail is dark, variegated with lighter spots. Width of head is 32 millimeters; length of head, 45. There are 14 and 15 lower labials, the loreal is nearly twice as long as wide, the diameter of eye is less than its distance to nostril.

TABLE 42.—*Measurements and scale counts of Boiga cynodon (Boie)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Anals
				mm	*mm*			
88	Palawan	W Schultze	♂	1 915	465	208	149	1
90	Polillo	C Canonizado	♂	1 590	395	209	143	1
253	Bunawan Agusan	F H Taylor	♂	2 020	465	268	141	1
89	Philippines	C H Lamb	♀	1 725	425	279	153	1
	Los Baños Luzon	do	♀	1 065	240	271	135	1

No	Preocular	Postoculars	Upper labials	Labials enter eye	Lower labials	Labials touch chin shields	Scale rows	Collection
88	1	2	9	4, 5 6	13-14	4-5	23	Bureau of Science
90	1	2	9	4 5 6	14-15	4-5	23	Do
253	1	2	9	4 5 6	14	5-5	22	F H Taylor
89	1	2	9	4 5 6	14-15	5-6	23	Bureau of Science
	1	2	8-9	3, 4, 5, 4, 5 6	15-13	4-5	23	College of Agriculture

There is a single fawn-colored form in the Bureau of Science collection (No 90). It has no markings of any kind In the size of the head, in body proportions, and in scalation it agrees with the two specimens recorded above.

The known variation of ventrals in Philippine specimens is 261 to 279, of subcaudals, 129 to 153 The range for the species given in Boulenger's Catalogue * is 248 to 290 and 114 to 156 for the ventrals and subcaudals, respectively The temporals range from 2 + 2 and 2 + 3 to 3 + 3 and 3 + 4 The upper labials vary from 8 to 10, and there is consequent variation in the number of labials entering the eye The species attains a length of more than 2 meters.

* Loc cit

Remarks.—This snake is rare in the Philippines Boulenger lists a single specimen from the Philippines, in the Cuming collection A specimen is in the collection of the College of Agriculture at Los Baños, Luzon, the stomach of this one contained a bird In the Philippines it is known from Polillo, Luzon, Culion, Mindanao, Leyte, and Palawan. Outside of the Philippines it is known from Burma, Malay Peninsula, Borneo, Sumatra, and Nias.

Genus PSAMMODYNASTES Gunther

Psammophis, part, Boie, Isis (1827) 521, Schlegel, Phys Serp 2 (1837) 201, Dumeril and Bibron, Erp Gen 7 (1854) 887, Peters, Mon. Berl Ak (1868) 452

Psammodynastes Gunther, Cat Col Snakes (1858) 140, Jan, Elenco Sist Ofid (1863) 90, Gunther, Rept Brit India (1864) 292, Mocquard, Bull Soc Philom VII 11 (1887) 172; Boulenger, Fauna Brit India, Rept (1890) 363, Cat Snakes Brit Mus 3 (1896) 172, Boettger, Ber Senck Nat Ges (1886) 110, Casto de Elera, Cat Fauna Filipinas 1 (1895) 432

Thamnodynastes Werner, Abh Bayer Akad Wiss II Klasse 22 (1904) 372

Anisodon Rosen, Ann & Mag Nat Hist VII 15 (1905) 176

Anisodontes Rosén, Ann & Mag Nat Hist VII 16 (1905) 128

"Maxillary teeth 9 to 11, third or third and fourth much enlarged, fang-like, followed by a short interspace, last enlarged and grooved, anterior mandibular teeth strongly enlarged Head distinct from neck, with angular canthus rostralis, eye rather large, with vertically elliptic or subelliptic pupil; nostril in a single nasal; frontal very narrow Body cylindrical, scales smooth, without pits, in 17 or 19 rows; ventrals rounded. Tail moderate or rather short, subcaudals in two rows." (*Boulenger.*)

The genus has two species, *Psammodynastes pulverulentus* (Boie) and *P pictus* Peters Only the former has been found in the Philippines

Snakes of this genus are probably slightly poisonous, but certainly not deadly to man They rarely exceed half a meter in length

PSAMMODYNASTES PULVERULENTUS (Boie)

Psammophis pulverulenta Boie, Isis (1827) 547; Schlegel, Phys Serp 2 (1837) 211, pl 8, figs 10 and 11, Abbild (1844) pl 43, figs 1-4, Duméril and Bibron, Erp Gen 7 (1854) 895

Dipsas ferrugmea Cantor, Proc Zool Soc London (1839) 53, Blyth, Journ As Soc Bengal 23 (1854) 293, 24 (1855) 715

Psammodynastes pulverulentus, part, Gunther, Cat Col Snakes (1858) 140

Psammodynastes pulverulentus GUNTHER, Cat Col Snakes (1858) 251, Rept Brit India (1864) 292, Zool Rec (1867) 188, PETERS, Mon Berl Ak (1861) 687, THEOBALD, Cat Rept Brit India (1876) 188, FISCHER Arch Nat (1885) 62, Jahrb wiss. Anst. Hamburg 2 (1885) 81, MOCQUARD, Bull Soc Philom VII 11 (1887) 172, pl 3, 12 (1888) 104, F MULLER, III Nacht Cat Herp Samml Basel Mus (1883) 17, BOETTGER, Ber Senck Nat Ges (1886) 110; BOULENGER, Fauna Brit India, Rept (1890) 363, Cat Snakes Brit Mus 3 (1896) 172, STEJNEGER, Bull U S Nat Mus 58 (1907) 383, figs 317–319, GRIFFIN, Philip Journ Sci § A 4 (1909) 600, § D 5 (1910) 214, § D 6 (1911) 264

Psalmodynastes pulverulentus TAYLOR, Philip Journ Sci § D 12 (1917) 366, § D 13 (1918) 260 (typ elr)

Lycodon bardi STEINDACHNER, Novara Exped Zool I Rept (1867) 90 (type locality, Philippines)

Amsodon lilljeborgi ROSÉN, Ann & Mag Nat Hist VII 15 (1905) 176, pl 11, fig 3

Description of species.—(From No 79. E. H. Taylor collection; collected at Bunawan, Agusan, Mindanao, October 1, 1912, by E. H. Taylor.) Rostral wider than high, visible from above as a narrow line, the suture with internasals shortest, that with

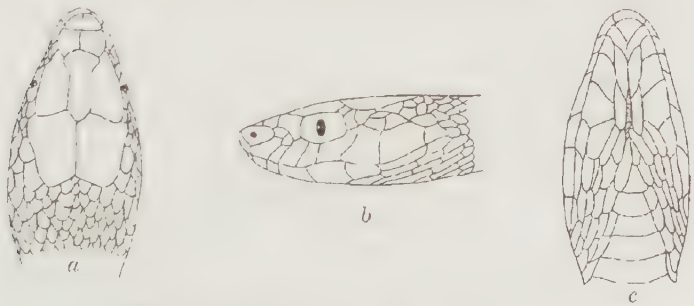

FIG 15 *Psammodynastes pulverulentus* (BOIE) after Stejneger. *a* head dorsal view, *b*, head, lateral view *c* head, ventral view

nasal longest, internasals small, triangular, less than half the size of prefrontals, latter large, in contact with loreal, preocular, and nasal, frontal elongate, much longer than wide, longer than its distance from end of snout, shorter than parietals, a little wider than supraoculars, its sides concave, pointed behind; parietals large, longer than wide, nasal longer than deep, nostril pierced near middle; loreal small, irregular, touching 2 labials, 2 preoculars, the upper five times as large as the lower, visible from above only as a point, supraocular large, broadly in contact with prefrontal and preocular, much larger than frontal, projecting out over eye, its edge continuous with the rather

sharp canthus rostralis; 2 postoculars, the inferior largest; temporals irregular, only a single temporal in contact with postoculars, the formulæ are: right side, $\frac{2}{1} + 2$, left side, 2 + 2, 8 upper labials, third, fourth, and fifth entering eye, seventh and eighth largest; 7 lower labials, three in contact with first pair of chin shields, 3 pairs of chin shields, lips slightly puffed out; preocular region concave; scale rows, 17, all smooth, ventrals, 170, anal single, subcaudals, 53.

Color in life.—Dark ash color above with a series of irregular blotches extending to end of body. The blotches are somewhat lighter than the surrounding ground color, and usually involve two or three very dark scales, tail a much lighter ash color, showing the blotches indistinctly, below grayish, with a heavy powdering of minute brownish spots, neck with various light dots which continue at irregular intervals along body; head markings very indistinct; a brilliant orange spot on each of the six chin shields, and a similar spot on sixth labial

Measurements of Psammodynastes pulverulentus (Boie)

	mm
Total length	575
Snout to vent	472
Tail	103

Variation.—The scale variations in this species are numerous, this is especially true of the lateral head scales. The loreals vary between 1 and 2, preoculars, 1 and 2; postoculars, between 1 and 3. For the most part there are 3 pairs of chin shields, yet in the large series examined many specimens were found with only 2. No considerable series from any particular island or locality has been obtainable Six specimens recently examined from Balabac Island, just north of Borneo, show the following characteristics. Five have 3 postoculars, one has 2, four have 1 loreal, two have 2, four have 3 pairs of chin shields, two have 2 These variations are apparently normal All six specimens vary widely in color and markings I do not believe it will be possible to separate any subspecific forms on the basis of color or scale variation

The ventrals in the Philippine specimens examined range from 151 to 173; the subcaudals, from 53 to 69 Stejneger * gives 146 to 175, and 44 to 66 as the known range of the ventrals and subcaudals, respectively

The coloration, especially the ground color, varies greatly. Certain specimens are grayish brown with large, transverse,

* Loc cit

angular ashy spots of lighter color Others are yellowish brown, the edges of the scales edged with brick red, and with blackish reticulations Still others are dark with the underpart of the head dark black with brilliant orange spots, and so on There seems to be no limit to the variations possible

TABLE 43 *-Measurements and scale counts of Psammodynastes pulverulentus (Boie)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Anals
				mm	*mm*			
79	Bunawan Agusan	E H Taylor	♀	575	103	170	53	1
80	do	do	♂	365	73	165	57	1
-	Philippines	Unknown	♀	460	88	(*)	62	1
-	do	do	-	355	72	156	61	1
-	do	do	♀	482	80	164	60	1
-	do	do	♂	362	91	159	61	1
-	do	do	♀	340	63	151	55	1
-	do	do	♀	422	77	158	57	1
608	Port Banga Zamboanga	W J Hutchinson	♀	560	100	165	53	1
609	do	do		385	85	158	59	1
913	Busuanga	W Schultze		365	86	156	66	1
911	do	do	♀	590	123	173	69	1
1563	Bunawan, Agusan	E H Taylor	♀	342	62	168	56	1
1621	Polillo	C Canonizado	♀	390	61	158	61	1

No	Frocculars	Postoculars	Loreals	Upper labials	Labials enter eye	Lower labials	Labials touch chinshields	Chinshields pairs	Temporals	Scale rows	Collection
79	2	2	1	8	3,4,5	7	3	3	2+2	17	E H Taylor
80	2	2-2	2	8	3 4 5	7	3	3	2+2	17	Do
	2	2	2	8	3,4 5	7	3	3	2+2	17	Santo Tomas
	2	2	2	8	3 4 5	8	3	3	2+2	17	Do
	2	2	2	8	3 4 5	7	3	3	2+2	17	Do
	2	3	2	8	3 4 5	7	3	3	2+3	17	Do
	2	2	2	8	3,4 5	8	3	3	2+3	17	Do
	2	2	2	8	3,4 5	7	3	2	2+3	17	Do
608	2	2	1	8	3,4 5	7	3	2	2+2	17	Bureau of Science
609	2	2	2	8	3 4 5	7	3	2	2+2	17	Do
913	2-1	3	1	8	3 4 5	7	3	3	2+2	17	Do
911	2	2	1	8	3,4 5	7	3	3	2+3	17	Do
1563	2	3-2	1-2	8	3 4 5	7	3	2	2+2	17	Do
1621	2	2	2	8	3 4 5	7	3	3	2+2	17	Do

* Mutilated

Remarks —This snake probably occurs on all the Philippine islands, it is known from Luzon, Polillo, Palawan, Balabac, Mindanao, Bongao, Busuanga, Negros, and Dinagat It is also

widely distributed over southeastern Asia, Malay Archipelago, and Formosa The specimens are usually taken in forests, frequently under logs and trash, and quite as often while crawling about in the open, or on small bushes

Genus DRYOPHIOPS Boulenger

Chrysopelea, part., GUNTHER, Cat Col Snakes (1858) 88, Rept Brit India (1864) 298, BOETTGER, Ber Senck Nat Ges (1886) 112, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 434
Dryophis, part, JAN, Elenco Syst Ofid (1863) 88
Dryophiops BOULENGER, Cat Snakes Brit Mus 3 (1896) 193, GRIFFIN, Philip Journ Sci § D 6 (1911) 261

"Maxillary teeth 20, subequal, the last two or three a little enlarged and grooved; anterior mandibular teeth enlarged Head elongate, distinct from neck, with distinct canthus rostralis, eye rather large, with horizontal pupil, nasal entire, frontal narrow, bell-shaped Body slender, compressed, scales smooth, oblique, with apical pits, in 15 rows; ventrals with suture-like lateral keel and a notch on each side corresponding to the keel Tail long; subcaudals in two rows, keeled and notched like the ventrals" (*Boulenger*)

Two species are known, *Dryophiops rubescens* Gray, and *D philippina* Boulenger, only the latter occurring in the Philippines This species is presumably confined to the northern part of the Philippines It differs from the former species in the absence of a loreal scale.

DRYOPHIOPS PHILIPPINA Boulenger

PLATE 6, FIGS 4 TO 6

Chrysopelea rubescens GUNTHER, Cat Col Snakes (1858) 145, Rept Brit India (1864) 299, STEINDACHNER, Reise d Novara, Rept Wien (1869) 71, BOETTGER, Ber Senck Nat Ges (1886) 112, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 434
Dryophiops philippina BOULENGER, Cat Snakes Brit Mus 3 (1896) 193, pl 9, fig 2, GRIFFIN, Philip Journ Sci § D 6 (1911) 261

Description of species.—(From No. 132, E. H Taylor collection, collected at Lamao Experiment Station, Bataan, Luzon, June 20, 1915, by Homer C McNamara) Rostral low, at least twice as wide as high, visible from above only as a line, largest suture with internasal, smallest with first labial; internasals narrowed in front, shorter than nasals; prefrontals wide, deep, large, in contact with second and third labials, about twice as large as internasals; frontal as long as its distance from end of snout, slightly wider than supraoculars, laterally concave, somewhat bell-shaped, narrowly separated from preocular, parietals

large, three-fourths as wide as long, bordered laterally by 4 temporals, in contact with superior postocular, nasal single, wedge-shaped, nostril pierced near central upper part; loreal wanting, preocular rather large, touching 2 labials; supraocular as long as and but slightly narrower than frontal, in contact with prefrontal at a single point, 2 postoculars, superior largest; temporals 2 + 2 + 2 + 2, gradually increasing in size, first scale row behind temporals and parietals somewhat enlarged; 9 upper labials, fourth, fifth, and sixth entering eye; 9 lower labials, 4 in contact with anterior pair of chin shields, these are not more than half the length of second pair; ventrals 186; anal divided; subcaudals 135; scales in 15 smooth rows, somewhat rectangular in shape, apical pits wanting; ventrals and subcaudals with keel and notch, the ends rather angular; diameter of eye much less than distance from nostril, pupil horizontal.

Color in life.—Above dull brownish gray, with many of the scales on first fourth of body edged or spotted irregularly with black, the rest of body with scattered dorsal spots, the scales minutely powdered with small various-sized dots, below creamy white, with a powdering of small and minute dots, throat and chin immaculate, head thickly spotted with rather large brownish spots, prefrontals each with a short line; internasals with diagonal lines, an irregularly edged line of lavender edged with dark brown goes from point of snout through eye to neck, and widens a little at angle of jaw; a dull stripe from occipital region to neck

Measurements of Dryophiops philippina Boulenger

	mm
Total length	558
Snout to vent	373
Tail	185
Length of head	18
Width of head	10

Variation.—The three specimens listed from the Bureau of Science collection are grayish lavender in color. No. 1486 shows much less spotting on the dorsal and the ventral surfaces than does the specimen described. The known ventral range is from 177 to 186, the subcaudal, from 111 to 135. Boulenger lists a specimen 750 millimeters long.

Remarks.—This species is known from Luzon, Mindoro, and Sibuyan. I failed to find it in Mindanao. A single specimen was observed in Bataan near the foot of Mount Mariveles, but

it escaped without being captured. Three specimens are listed in Boulenger's Catalogue; one is from northern Luzon, and the other two are specimens collected by H. Cuming, labeled "Philippines"

The species is arboreal and feeds on small lizards for the most part The grooved fangs suggest the presence of poison glands The poison is incapable of serious injury to larger animals or man.

TABLE 44.—*Measurements and scale counts of Dryophiops philippina Boulenger*

No	Locality	Collector	Sex	Length	Tail	Ventrals
				mm.	mm.	
132	Lamao, Bataan	H C McNamara	♂	558	185	186
207	Manila	Mrs Graham	♀	710	230	181
1496	Mindoro	Marine Biological Expedition	♂	537	180	180
1487	....do	....do	♂	627	[a]160	179
695	Sibuyan	H M Weber	♀	590	180	185

No	Subcaudals	Anals	Preoculars	Postoculars	Upper labials	Labials enter eye	Temporals	Scale rows	Collection
132	135	2	1	2	9	4 5,6	2+2+2	15	E H Taylor
207	123	2	1	2	9	4 5,6	2+2+2	15	Bureau of Science
1496	134	2	1	2	9	4 5,6	2+2+2	15	Do
1487	(a)	2	1	2	9	4,5 6	2+2+2	15	Do
695	111	2	1	2	9	4,5 6	2+2+2	15	E H Taylor

[a] Mutilated.

Genus CHRYSOPELEA Boie

Chrysopelea BOIE, Isis (1827) 520, WAGLER, Syst Amph (1830) 188, BOULENGER, Cat. Snakes Brit Mus 3 (1896) 195

"Maxillary teeth 20 to 22, subequal, the last three a little longer and grooved; anterior mandibular teeth longest. Head distinct from neck; eye rather large, with round pupil Body elongate, compressed; scales smooth or feebly keeled, oblique, with apical pits, in 17 rows, ventrals with suture-like lateral keel and a notch on each side corresponding to the keel. Tail long; subcaudals in two rows, keeled and notched like the ventrals" (*Boulenger.*)

Only a single species, *Chrysopelea ornata* (Shaw), enters the Philippines. It is a widely distributed form and varies much in coloration The loreal is a variable element

CHRYSOPELEA ORNATA (Shaw)

PLATE 11, FIGS 6 TO 8

Coluber ornatus SHAW, Zool 3 (1802) 477
Tyria ornata FITZINGER, Neue Class Rept (1837) 60
Chrysopelea ornata BOIE, Isis (1827) 546, DUMERIL and BIBRON, Erp Gen 7 (1854) 1042, JAN, Icon Gén (1869) 33, pl 1, fig 1; BOETTGER, Ber Offenb Ver Nat (1888) 84, BOULENGER, Faun. Brit India, Rept (1890) 371, Cat Snakes Brit Mus 3 (1896) 196
Chrysopelea ornata TAYLOR, Philip Journ Sc § D 12 (1917) 366, § D 13 (1918) 261, typ err

Description of species.—(From No. 428, E. H. Taylor collection; collected at Bunawan, Agusan, Mindanao, 1912, by E H Taylor.) Snout distinctly flattened, rostral but little broader than deep, broadly visible from above, its broadest suture formed with nasals; internasals more than half as large as prefrontals and nearly as long; prefrontals forming subequal sutures with frontal, preocular, and internasal, frontal broadest at its extreme anterior portion, longer than wide, but little wider than supraocular and about as long, equal to its distance from end of snout; parietals very broad, nearly as broad as long, longer than frontal, touching only superior postocular, 2 nasals, subequal in size, nostril rather large, loreal about twice as long as high; preocular large, visible from above, touching frontal; supraoculars very broad; 2 postoculars, superior largest; temporals 2 + 2 + 2; 9 upper labials, fourth, fifth, and sixth entering eye, 11 lower labials, first 5 touching first chin shields which are shorter and broader than posterior; mental triangular, scales smooth, with apical pits, in 17 rows, no evidence of keels present, ventrals 214, each with a strong keel and notch, the outer parts rounding and turned up on side, the last ventral divided; subcaudals 119, keeled and notched (extreme tip of tail injured) Head distinct from neck, eye large, pupil round.

Measurements of Chrysopelea ornata (Shaw)

	mm
Total length	962
Snout to vent	707
Tail	255
Length of head	25
Width of head	13

Color in life—Black above with a large yellowish green spot on each scale; spots larger on sides, red spots on middle line of back arranged like a four-petaled flower, a yellow band crosses behind parietals, and another in front of parietals, a third line crosses head in front of frontal; various black and yellow

irregular lines crossing head; temporals each with a greenish yellow spot; upper labials yellow, their upper edges black; chin and throat immaculate greenish yellow.

Variation.—The specimens studied have a ventral range of from 208 to 218, and a subcaudal range from 128 to 142. The preocular frequently fails to touch the frontal. There are seven specimens in my collection from central eastern Mindoro, five of which have the loreal scale wanting, and the head abnormally flat. The specimens examined from northern Mindoro do not exhibit these characters. Two specimens from Balabac also have the loreal wanting, but they differ greatly in color and markings from Mindoro specimens. Boulenger mentions that the loreal is sometimes fused with the prefrontal.

TABLE 45.—*Measurements and scale counts of Chrysopelea ornata (Shaw)*

No	Sex	Locality	Collector	Total length	Tail length	Ventrals
				mm.	*mm.*	
402	♂	Camiguin	R. C. McGregor	975	284	209
234	♂	Polillo	C. Canonizado	760	242	208
241	♀	do	do	1055	315	217
247	♀	do	do	805	237	214
249	♀	do	do	910	230	208
368	♀	Bunawan Agusan	E. H. Taylor	765	230	213
428	♀	do	do	962	[a]256	214
595	♀	do	do	900	218	218
1832	♀	Bubuan Island	do	970	[a]140	208

No	Subcaudals	Upper labials	Lower labials	Preocular touches frontal	Postoculars	Loreal	Temporals	Collection
402	134	9	10	Yes	3	Present	2+2+2	Bureau of Science
234	134	9	9	Yes	2	do	2+2+2	Do
241	142	9	10	No	2	do	2+2+2	Do
247	134	9	10	No	2	do	2+2+2	Do
249	130	9	10	Yes	2	do	2+2+2	Do
368	138	10	11	Yes	2	do	2+2+2	E. H. Taylor
428	(a)	9	11	Yes	2	do	2+2+2	Do
595	128	9	11	Yes	2	do	2+2+2	Do
1832	(a)	9	8	No	2	do	2+2+2	Bureau of Science

[a] Tail mutilated.

The specimens vary considerably in color, but this is largely due to age. The young are dark brown to blackish traversed by very numerous greenish or reddish yellow bars; specimens somewhat older have greenish spots on the black scales between the light bars, medium-sized specimens usually exhibit the series of red spots on the black line as in the described specimen.

Some older specimens become almost a uniform brown, with a few black marks dorsally Specimens preserved in formalin become a deep blue-black in color I believe that large series from various islands will probably show constant variations of sorts

Remarks.—This species is widely distributed in the Philippines It is known from Luzon (several localities), Polillo, Camiguin, Mindoro, Banton, Bantayan, Mindanao, Samar, Palawan, and Bubuan

It is widely distributed throughout the Malay Peninsula and Archipelago The species is probably slightly poisonous, but is not dangerous to man.

Genus DRYOPHIS Dalman

Dryinus, part, MERREM, Tent. Syst Amph (1820) 136, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 808

Dryophis DALMAN, Oefvers of Zool Arb, Stockholm (1822), FITZINGER, Neue Class Rept (1826) 29 BOULENGER, Fauna Brit India, Rept (1890) 367, Cat. Snakes Brit Mus 3 (1896) 177

Tragops GUNTHER, Rept Brit India (1864) 305

Passerita GRAY, Ann Phil 10 (1825) 208, GUNTHER, Cat Col Snakes (1858) 160

Psammophis, part, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 887

Tropidococcyx GUNTHER, Ann & Mag Nat Hist III 6 (1860) 428

"Maxillary teeth 12 to 15, one or two in the middle much enlarged, fang-like, and followed by an interspace, after which the teeth are very small; one or two posterior grooved fangs, situated below the posterior border of the eye, mandibular teeth increasing in length to the third or fourth, which is very large, fang-like, the posterior small. Head elongate, distinct from neck, with strong canthus rostralis and concave lores; eye rather large, with horizontal pupil; nostril in the posterior part of a single nasal; frontal narrow, more or less bell-shaped. Body much elongate and compressed; scales smooth, without apical pits, in 15 rows, disposed obliquely, vertebral row slightly enlarged; ventrals rounded Tail long; subcaudals in two rows." (*Boulenger.*)

Key to the Philippine species of Dryophis Dalman

*a*¹ Anal divided, 1 preocular, 3 labials entering eye, 3 small loreals, internasal in contact with labial D prasinus Boie (p 219)

*a*² Anal single, 2 preoculars, internasals not in contact with labial, 2 labials enter eye

*b*¹ Loreals small, color green, blue-green, or reddish D preocularis sp nov (p 222)

*b*² A large loreal below 2 small ones, color gray. D grisens sp nov (p 221)

DRYOPHIS PRASINUS Boie

Dryinus nasutus BELL, Zool Journ 2 (1825) 327
Dryophis prasinus BOIE, Isis (1827) 545, SCHLEGEL, Abbild (1837) pl. 8, figs 1–6, GUNTHER, Cat Col Snakes (1858) 159, JAN, Icon Gén (1869) 33, pl 5, fig 1, BOULENGER, Fauna Brit India, Rept. (1890) 369, Cat Snakes Brit Mus 3 (1896) 181, PETERS, Mon Berl Ak (1861) 688; FISCHER, Jahrb wiss Anst Hamburg (1885) 80.
Dryinus prasinus, part, CANTOR, Cat Mal Rept (1847) 81
Oxybelis fulgidus, part, DUMERIL and BIBRON, Erp Gén 7 (1854) 817
Tragops prasinus DUMERIL and BIBRON, Erp Gén 7 (1854) 824, GUNTHER, Rept Brit India (1864) 303, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 434 (and var)
Tragops xanthozonius DUMERIL and BIBRON, Erp Gén 7 (1854) 824, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 435

Description of species.—(From No 257, Bureau of Science collection, collected at Iwahig, Palawan, December 22, 1907, by C. M Weber) Head narrow, elongate; snout projecting; rostral small, barely visible above; anterior edge of nasals also visible above, internasals much longer than wide, in contact (on one side only) with second labial, prefrontal about twice as long as wide, posterior edges rounding, overlapping frontal; frontal elongate, much narrowed posteriorly, shorter than its distance to end of nose, supraoculars very large, nearly as wide as long, wider than frontal; parietals long, somewhat longer than frontal, nasal three times as long as wide; 3 and 4 very small loreals; 1 large, irregular preocular, 2 postoculars, upper larger, temporals 2 + 3 + 3, third upper largest, 9 upper labials, fourth, fifth, and sixth entering eye, seventh largest, ninth much elongate, mental small, as wide as rostral; 8 and 9 lower labials, first 4 in contact with first pair of chin shields which are very much shorter than second pair; latter bordered by 2 labials, eye large, pupil horizontal, a deep elongate depression from eye to nostril; scales in 15 rows, the median somewhat enlarged toward posterior part of body, scales on back above anal region keeled, ventrals, 211, each with indistinct keels laterally; subcaudals, 177, anal divided.

Measurements of Dryophis prasinus Boie

	mm
Total length	1,400
Snout to vent	888
Tail	512
Length of head	37
Width of head	14

Color in alcohol.—Above greenish lavender, more greenish anteriorly, skin between scales lavender with the skin whitish between alternating transverse rows, belly grayish or greenish, with two distinct cream stripes running entire length of body on outer side of ventrals.

Remarks.—This is the typical *Dryophis prasinus* and agrees well with Boulenger's description of the species in having 1 preocular, 3 labials entering eye, and the divided anal, the variation in ventral counts as shown in the table is 209 to 222; of subcaudals 174 to 202, all of which counts fall well within Boulenger's limits.

TABLE 46.—*Measurements and scale counts of Dryophis prasinus Boie*

No.	Sex	Locality	Collector	Length	Tail	Ventrals	Subcaudals	Anals	Loreals
				mm	*mm*				
253	♂	Palawan	C. M. Weber	1,160	450	211	192	2	3
256	♀	do	do	1,310	----	218	202	2	2
256	♂	do	do	1,440	510	219	189	2	3
257	♀	do	do	1,400	512	211	177	2	3-4
258	♂	do	do	1,370	----	221	198	2	3
263	♂	do	do	1,410	500	222	177	2	3
267	♀	do	do	970	----	219	191	2	3
268	♂	do	do	953	340	209	192	2	3
272	♂	do	C. H. Lamb	----	----	----	----	2	3
273	♂	do	W. Schultze	970	300	215	191	2	4
276	♂	do	C. M. Weber	----	----	----	----	2	3
345	♀	do	do	1,315	456	213	174	2	2

No.	Preoculars	Postoculars	Upper labials	Lower labials	Labials enter eye	Temporals	Scale rows	Labial touches internasal	Collection
253	1	2	9	9	4-5-6	2+3+3	15	Yes	Bureau of Science
255	1	2	9	9	4-5-6	2+3+3	15	Yes	Do.
256	1	2	9-10	9	4-5-6 / 5-6-7	2+2+3	15	Yes	Do.
257	1	2	9	8-9	4-5-6	2+2+3	15	Yes	Do.
258	1	2	9	9	4-5-6	2+3+3	15	Yes	Do.
263	1	2	9	9	4-5-6	2+2+3	15	Yes	Do.
267	1	2	9	9	4-5-6	2+3+3	15	Yes	Do.
268	1	2	9	9	4-5-6	2+3+4	15	Yes	Do.
272	1	2	9	9	4-5-6	2+3+3	15	Yes	Do.
273	1	2	9	9	4-5-6	2+3+3	15	Yes	Do.
276	1	2	9	9	4-5-6	2+3+3	15	Yes	Do.
345	1	2	8	9	4-5-6	2+2+4	15	Yes	Do.

This species in the Philippines is probably confined to Palawan and the near-by islands, outside the Philippines it is known in southern Asia and the Malay Archipelago.

DRYOPHIS GRISEUS sp nov

Type.—No. 271, Bureau of Science collection, collected on Camiguin Island, Cagayan Islands, in 1907, by R. C McGregor

Description of type.—(Adult male) Head long, slender, snout projecting; rostral visible above, the projecting part somewhat striate, internasals long, narrow, not touching labials; prefrontals nearly twice as long as wide, frontal elongate, shorter than its distance to end of snout, parietals a little longer than broad; nasal elongate, four times as long as wide; 2 moderate-sized loreals above a very large loreal; 2 large preoculars, upper touching frontal, 2 postoculars, an anterior and a posterior subocular, temporals 2 + 3 + 3, third upper largest, 8 and 9 upper labials, third and fourth upper labials broken, normally, leaving the lower postocular and a large square loreal scale below the 2 upper loreals, fifth labial enters eye; 9 and 8 lower labials, fourth and fifth touching anterior pair of chin shields, which are smaller than second pair; ventrals, 208; subcaudals, 160 (tip of tail missing, estimated 15 subcaudals also missing); anal single, body compressed with only very indistinct lateral keels on ventrals.

Color in alcohol.—Above uniform gray, growing lighter gray on sides, skin on neck and body between scales black and white, the black extending on scales on anterior part of body, tail above gray, at base mottled with darker, growing brownish toward end, belly gray-white with a cream-white stripe along sides of belly; tail dark mottled below.

Measurements of Dryophis griseus sp nov

	mm
Total length	1,498
Snout to vent	951
Tail	547
Length of head	36
Width of head	16

Variation.—Two other specimens are in my collection, one from Limay, Bataan, the other from Montalban, near Manila. The Limay specimen agrees with the type in practically all details save that the fourth labial enters the eye, and the tail is not so dark as in the type.

Remarks.—This species may be identical with Cope's variety *laeta*. Unfortunately his description is not at hand If the species are identical, then Cope's name will be used as a specific, and not as a varietal name.

Known from Luzon and Camiguin Island There is a specimen of this species in the collection of the Ateneo de Manila This species differs from *Dryophis prasinus* in having an undivided anal, and in having 2 preoculars instead of 1

From *Dryophis preocularis* it differs in the presence of a large loreal in front of the lower preocular. From both it differs in the distinctive coloration It is probably most closely related to *D fasciolatus* but differs in the number of loreals and preoculars

TABLE 47.—*Measurements and scale counts of Dryophis griseus sp nov*

No	Sex	Locality	Collector	Length	Tail	Ventrals
				mm	*mm*	
254	♂	Limay Bataan	H M Curran	985	551	219
271	♂	Camiguin	R C McGregor	1 445	547	208
R 663	♂	Montalban	W Schultze	(a)	545	(a)

No	Subcaudals	Anals	Loreals	Preoculars	Postoculars	Labials Upper	Labials Lower	Temporals	Scale rows	Collection
254	180	1	2 / 1	2	2	8	9	2+3+3	15	Bureau of Science
271	a 160	1	2 / 1	2	2	8-8	9-8	2+3+3	15	Do
R 663	176	1	2 / 1	3	2	9	10-9	2+3+3	15	E H Taylor

[a] Mutilated

DRYOPHIS PREOCULARIS sp nov

PLATE 28

Type.—No 408, E. H Taylor collection, collected at Bunawan, Agusan, Mindanao, March 12, 1913, by E H Taylor

Description of species.—(Adult female) Rostral broader than high, the portion seen above a mere line, internasals elongate, nearly twice as long as wide, their outer edge bent sharply down at canthus rostralis; prefrontals somewhat wider than internasals, twice as long as wide, overlapping frontal,

frontal at least one and a half times as long as wide, very narrow behind, in its widest part it does not equal width of supraoculars; parietals large, elongate; supraoculars large and projecting, so that eye is hardly visible from above, canthus rostralis very sharp, 2 large preoculars, the upper separating supraoculars from prefrontals; 2 loreals, the posterior largest; nostril in a very elongate, very narrow nasal; 2 small postoculars; temporals 2 + 3, parietals bordered by 3 temporals, 9 upper labials in the following order of size sixth, fifth, eighth, second, first, third, seventh, fourth, ninth; fourth, fifth, and sixth enter eye, mental very small, triangular; 7 lower labials in the following order of size fifth, fourth, sixth, seventh, first, third, second, 4 labials touch first pair of chin shields; scales smooth, in 15 rows; ventrals, 227, keeled laterally, subcaudals, 110; anal undivided, eye large, equal to half its distance from snout, latter acuminate, projecting.

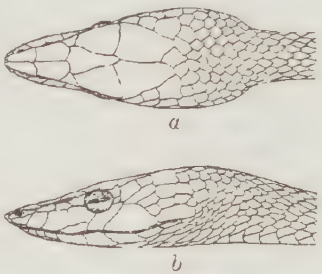

FIG. 10. *Dryophis preocularis* sp. nov. drawing of a Pohilo specimen, *a* head dorsal view *b* head lateral view

Color in life.—Bluish green tending toward yellowish green on sides, with no markings of any sort; head greenish; belly greenish with a narrow cream line running full length of body and tail on outer part of ventrals and anals

Remarks.—This species is widely distributed, from Mindanao to Luzon In the character of the anal shield and in the arrangement of the preoculars it is constant In Negros and Panay there occurs what appears to be a variety of the species It is red and doubtless represents what has been regarded by other authors as *Dryophis prasinus xanthozonus* However, *Dryophis xanthozona* is a distinct species and is probably confined to southeastern Asia and Java. I regard the red form here as merely a color variety of *Dryophis preocularis* A red form also occurs in *Dryophis prasinus*.

The species here described is known from Mindanao (green form); Negros (green and red forms), Panay (red form), Pohilo (green form), and Luzon (green form). Additional material from Negros and Panay may warrant the separation of the red form as a subspecies

TABLE 48.—*Measurements and scale counts of Dryophis preocularis sp. nov.*

No.	Sex	Locality	Collector	Length	Tail	Ventrals	Subcaudals	Anals
				mm	mm			
269	♂	Polillo	C. Canonizado	1,030	382	221	199	1
274	♀	do	do	1,550	532	213	177	1
342	♀	do	do	1,145	460	216	192	1
343	♀	do	do	1,170	460	216	199	1
344	♂	do	do	450	(a)	215	(a)	1
346	♀	do	do	960	345	212	175	1
347	♂	do	do	840	(a)	221	(a)	1
349	♂	do	do	985	370	118	201	1
350	♀	do	do	1,460	500	219	a 169	1
351	♂	do	do	1,080	400	214	183	1
352	♂	do	do			216	181	1

No.	Loreals	Preoculars	Postoculars	Upper labials	Lower labials	Labials enter eye	Temporals	Scale rows	Collection
269	2	2	2	8-10	9	5-6	2+3+3	15	Bureau of Science
274	2	2	2	7	9	5	2+3+3	15	Do.
342	2-3	2	2	8		4-5	2+3	15	Do.
343	3	2	2	8	9	4-5	2-2+3	15	Do.
344	2	2	2	8	9	4-5	2+3+3	15	Do.
346	3	2	2	8	9	4-5	2+3+3	15	Do.
347	2	2	2	8-9	9	4-5	2+3+3	15	Do.
349	3	2	2	8	9	4-5	2+3-3	15	Do.
350	2	1	2	8-9	9	4-5-6	2-3+3	15	Do.
351	2	2	2	8-9	8	4-5	2+3+3	15	Do.
352	3	2	2	8	9	4-5	2+3+3	15	Do.

[a] Tip of tail missing.

DEADLY POISONOUS SNAKES

ELAPIDÆ

An erect, grooved or perforated fang on the anterior portion of the anterior maxillary bone, or several anterior maxillary teeth grooved or perforated; in either case connecting with a poison gland, otherwise, as the Natricidæ. Deadly poisonous.

The family corresponds to Boulenger's group C, of the family Colubridæ, which he calls Proteroglypha. The family Elapidæ is composed of two subfamilies, the first group consists of aquatic or semiaquatic snakes, the second, of land snakes.

Key to the subfamilies of the Elapidæ

a^1	Tail compressed into a vertical fin	Hydrinæ (p. 225)
a^2	Tail cylindrical, poison fangs strongly developed	Elapinæ (p. 254)

HYDRINÆ

Hydrophinæ BOULENGER, Cat Snakes Brit Mus 3 (1896) 264, WALL, Mem As Soc Bengal 2 (1907–10) 169

Nostrils dorsal or lateral, usually valvular; tail strongly compressed, oarlike, hypapophyses not developed throughout the vertebral column. Body compressed, the ventrals very small in marine types, or large in semiaquatic forms Rostral shield with two notches in oral border, only the cleft part of tongue capable of being protruded. Anterior maxillary teeth folded into a tube or grooved; frequently posterior teeth also grooved. Deadly poisonous.

Eleven genera of this subfamily are recognized; with the exception of *Laticauda*, *Aipysurus*, and *Emydocephalus*, all are entirely aquatic The three mentioned are found frequently at some distance from the water, and these genera are equipped with wide ventral scales, which enable them to perform land locomotion.

Key to the Philippine genera of the Hydrinæ

a' Ventral scales large, transversely widened
  b' Nostrils on upper surface of snout, nasals in contact
    Aipysurus Lacépède (p 225)
  b Nostrils lateral, nasals separated by internasals
    Laticauda Laurenti (p 227)
a Ventral scales small or indistinguishable from body scales, nostrils superior
  b' All maxillary teeth grooved (sometimes faintly), 4 to 10 small teeth follow fangs Disteira Lacépède (p 236)
  b' Only 2 to 5 faintly grooved teeth follow the large fangs
    Lapemis Gray (p 249)
  b' Poison fangs short, followed after an interspace by 7 or 8 solid teeth Pelamydrus Stejneger (p 252)

It is highly probable that species of other genera occur in the Islands, and that specimens will be taken along the coasts

Genus AIPYSURUS Lacépède

Aipysurus LACÉPÈDE, Ann Mus 4 (1804) 197, DUMÉRIL and BIBRON Erp Gén 7 (1854) 1323, FISCHER, Abh Natur Hamburg 3 (1856) 31, JAN, Elenco Syst Ofid (1863) 108, GUNTHER, Rept Brit India (1864) 357, BOULENGER, Cat Snakes Brit Mus 3 (1896) 303, WALL, Mem As Soc Bengal 2 (1907–10) 189
Stephanophydra TSCHUDI, Arch Nat (1837) 331, GRAY, Cat Snakes (1849) 59
Hydrophis, part, SCHLEGEL, Phys Serp 2 (1837) 488
Hypotriopis GRAY, Ann & Mag Nat Hist 18 (1846) 284
Tomogaster, part, SCHMIDT, Abh Natur Hamburg 2 (1852) 75
Emydocephalus KREFFT, Proc Zool Soc London (1869) 821
Pelagophis PETERS and DORIA, Ann Mus Genova 13 (1878) 413

"Maxillary a little longer than the ectopterygoid, extending forwards beyond the palatine; poison-fangs moderate, followed, after a short interspace, by 8 to 10 grooved teeth; anterior mandibular teeth feebly grooved. Snout short; nostrils superior; head-shields large or broken up into scales; nasals in contact with each other. Body moderate, scales imbricate; ventrals large, keeled in the middle." (*Boulenger*)

The genus is distributed in the Tropics, throughout the Malay Archipelago and the western Pacific Ocean. Boulenger recognizes four species, one of which, *Aipysurus annulatus* Krefft, Wall has placed in the genus *Emydocephalus*. Only one species has been recorded from the Philippines.

AIPYSURUS EYDOUXII (Gray)

Tomogaster eydouxii GRAY, Cat. Vip. Snakes (1849) 59.

Thalassophis anguilliformis SCHMIDT, Abh. Natur. Hamburg 2 (1852) 76, pl. 1.

Thalassophis muraenaeformis SCHMIDT, Abh. Natur. Hamburg 2 (1852) 77.

Aipysurus laevis (non Lacépède) GUICHENOT, Voy. Pôle Sud, Zool. 3, Rept. (1853) 21, pl. 6, DUMERIL and BIBRON, Erp. Gen. 7 (1854) 1826, pl. 77*b*, fig. 4; FISCHER, Abh. Natur. Hamburg 3 (1856) 32, JAN, Icon. Gen. (1872) 40, pl. 2, fig. 1.

Aipysurus margaritophorus BLEEKER, Nat. Tijds. Nederl. Ind. 16 (1858) 49.

Aipysurus anguilliformis GUNTHER, Rept. Brit. India (1864) 357, BOETTGER, Zool. Anz. (1892) 420.

Aipysurus eydouxii BOULENGER, Cat. Snakes Brit. Mus. 3 (1896) 304, WALL, Mem. As. Soc. Bengal 2 (1907–10) 189, figs. 5, A, B, C (after Jan).

Description of species.—(From Boulenger.) "Eye a little longer than its distance from the mouth. Rostral a little broader than deep; upper head-shields regular, frontal large, once and two thirds to twice as long as broad, longer than its distance from the end of the snout, as long as or a little longer than the parietals; nasal in contact with or narrowly separated from the præocular; one præ- and two postoculars; temporals 1 + 2 + or 2 + 2, six upper labials, fourth entering the eye; anterior chin-shields shorter than the posterior, which are separated by an azygous shield. Scales smooth, in 17 rows. Ventrals, 140–142.

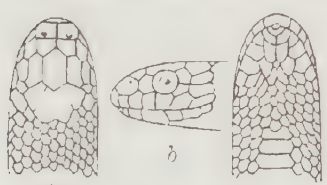

FIG. 20. *Aipysurus eydouxii* (Gray); after Jan, copied from Wall. *a*, head, dorsal view; *b*, head, lateral view; *c*, head, ventral view.

Color.—"Dark brown above, with cross-bands of yellow, black-edged scales, often broken up on the vertebral line; these bands widening towards the belly, which is yellow, with or without dark brown spots."

Measurements of Aipysurus eydouxi (Gray)

	mm
Total length	490
Snout to vent	420
Tail	70

Variation.—Wall adds the following characters: Rostral touches 4 shields, the portion visible above about half the internasal suture. Prefrontals not in contact with supralabials, usually undivided, but sometimes divided longitudinally on one or both sides into two parts; the sutures of frontal subequal, one-third or one-fourth longer than supraoculars, longer than parietals, parietals undivided or divided; nasals touch 2 supralabials; fourth lower labial largest; 2 pairs of chin shields, the second pair separated by a single scale, ventrals from 138 to 142, three or more times the width of outer scale row.

Remarks.—This species is rare in the Philippines. I have seen no specimen. Both Boulenger and Wall give the Philippines as part of its range, and the species is included in the present work on their authority.

Genus LATICAUDA Laurenti

Laticauda LAURENTI, Syn. Rept. (1768) 109, STEJNEGER, Bull. U. S. Nat. Mus. 58 (1907) 402.

Hydrus, part., SCHNEIDER, Hist. Amph. 1 (1799) 233.

Platurus LATREILLE, Hist. Nat. Rept. 4 (1802) 183, DAUDIN, Rept. 7 (1803) 223, WAGLER, Syst. Amph. (1830) 166, DUMÉRIL and BIBRON, Erp. Gén. 7 (1854) 1318, FISCHER, Abh. Natur. Hamburg 3 (1856) 27, JAN, Elenco Syst. Ofid. (1863) 108, GUNTHER, Rept. Brit. India (1864) 355, BOETTGER, Ber. Senck. Nat. Ges. (1886) 118, BOULENGER, Fauna Brit. India, Rept. (1890) 394, Cat. Snakes Brit. Mus. 3 (1896) 306; CASTO DE ELERA, Cat. Fauna Filipinas 1 (1895) 442.

Hydrophis, part., SCHLEGEL, Phys. Serp. 2 (1837) 488.

"Maxillary much shorter than the ectopterygoid, extending forwards beyond the palatine, with two large poison-fangs; one or two small solid teeth near the posterior extremity of the maxillary. Head-shields large, nostrils lateral, the nasals separated by internasals; præocular present; no loreal. Body much elongate; scales smooth and imbricate; ventrals and subcaudals large." (*Boulenger.*)

Stejneger [*] recognizes provisionally five species of the genus, while Wall [†] recognizes but three. Three species are found in the Philippines

Key to the Philippine species of Laticauda Laurenti

a[1] Rostral not divided horizontally, belly without median keel
  b[1] Two prefrontals, scales in 19 rows L laticaudata (Linnæus) (p 228)
  b Three prefrontals, scales in 21 to 25 rows
    L colubrina (Schneider) (p 231)
a[2] Rostral divided horizontally, belly with median keel on posterior half
    L semifasciata (Reinwardt) (p 234)

I disagree with Barbour's [‡] opinion that the first two should be regarded as subspecies of a single species Besides the almost constant variation of certain scale elements, the fact should not be overlooked that *L. colubrina* apparently grows to nearly double the size of *L laticaudata*

LATICAUDA LATICAUDATA (Linnæus)

Coluber laticaudatus LINNÆUS, Mus Ad Frid (1754) 31, pl 16, fig 1, Syst Nat ed 10 1 (1758) 222, ed 12 1 (1766) 383, ANDERSON, Bihang Svensk. Vet. Akad Handl IV 24 (1899) 18

Laticauda scutata LAURENTI, Syn Rept (1768) 109

Platurus fasciatus LATREILLE, Hist Nat Rept 4 (1802) 185, FISCHER, Abh Natur Ver Hamburg 3 (1856) 28, PETERS, Mon Berl Ak (1861) 691, (1872) 860, HALLOWELL, Proc Acad Nat Sci Philadelphia (1860) 198, BOULENGER, Proc Zool Soc London (1887) 149

Hydrophis colubrinus, part, SCHLEGEL, Phys Serp 2 (1837) 514

Platurus laticaudatus GIRARD, Herp U S Expl Exp (1858) 180, PETERS, Mon Berl Ak (1877) 417, BOETTGER, Ber Senck Nat Ges (1886) 118, BOULENGER, Fauna Brit India, Rept (1890) 395, text fig, Cat Snakes Brit Mus 3 (1896) 307, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 442, WALL, Proc Zool Soc London (1908) 96 and 101, Mem As Soc Bengal 2 (1907–10) 185

Platurus laurenti RAFINESQUE, Am Month Mag 1 (1817) 432

Coluber platicaudatus OKEN, Allgem Naturg 8 (1836) 566

Platurus latecaudatus var A, GUNTHER, Cat Col Snakes (1858) 272

Platurus peschelii JAN, Rev Mag Zool (1859) 149, Icon Ophid 40 (1872) pl 1, fig 2, GUNTHER, Rept Brit India (1864) 356, pl 25, fig A, ANDERSON Proc Zool Soc London (1871) 189, FAYRER, Thanatoph Ind (1874) pl 19

Platurus affinis ANDERSON, Proc Zool Soc London (1871) 190

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[*] Loc cit

[†] Wall, Mem As Soc Bengal 2 (1907–10) 107, states that the supposedly solid teeth really have very small grooves

[‡] Barbour, Mem Mus Comp Zool Harvard Coll 44 (1912) 131

Laticauda laticaudata STEJNEGER, Bull U S. Nat Mus 58 (1907) 402, GRIFFIN, Philip Journ Sci § D 6 (1911) 265
Laticauda laticaudata laticaudata BARBOUR, Mem Mus Comp Zool Harvard Coll 44 (1912) 131

Description of species.—(From No. 1884, E H Taylor collection, collected on Mindanao coast, October, 1913, by E H Taylor.) Head moderate, not or scarcely distinct from neck, rostral much higher than wide, scarcely visible above, forming its broadest suture with first labial; internasals triangular, narrowly in contact with rostral, forming their longest suture with nasal,

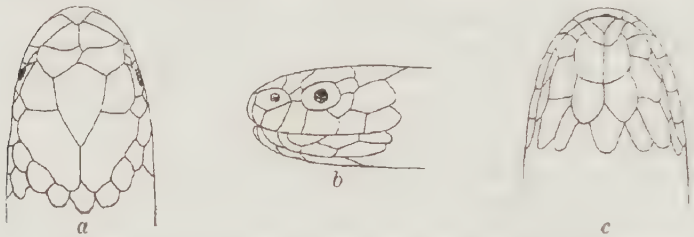

FIG 21 *Laticauda laticaudata* (Linnæus), after Wall, *a*, head, dorsal view, *b*, head, lateral view, *c* chin

prefrontals broader than deep, narrowly in contact laterally with third labial, separating nasal and prefrontal, the suture between prefrontals shorter than that between internasals, frontal longer than wide, four-sided, much longer than its distance from end of snout, as long as parietals; nasal narrow, elongate, nostril pierced nearer its posterior end, in contact with 3 labials, 1 preocular, higher than wide, 2 postoculars, the lower lying somewhat under posterior part of eye; 1 anterior temporal, temporal formula, 1 + 2 + 3, mental very small, not or very narrowly separated from second pair of labials, not touching chin shields, lower labials nearly hidden, for the most part lying horizontal on jaws, the 2 anterior touching first chin shields, which are a little smaller than posterior, tail strongly compressed, widened at tip.

Color in life.—Above blue with 66 black bars about body, of which 7 are confined to tail, bands are 3 scales wide on back, separated by interspaces of equal width but narrow on belly, a broad band on head, widest medially, not reaching anterior part of frontal, head band and 2 nuchal bands interrupted ventrally, but connected by a broad ventrolateral band on side of head and neck, no light labial band, top of snout yellow with

supercihary yellow line; a yellow band on chin and throat medially, belly yellow, the color reaching up halfway on sides; eye blue, small, pupil round

Measurements of Laticauda laticaudata (Linnæus)

	mm
Total length	581
Snout to vent	515
Tail	66
Length of head	16
Width of head	8 5
Depth of tail, greatest	11

Variation—In the three specimens examined the ventral range is 228 to 242, the subcaudal, 42 to 45, the number of bands varies between 53 and 66. The variation of scale counts in twelve specimens from various localities listed by Boulenger is as follows Ventrals, 210 to 240 (average, 227); subcaudals, 25 to 45, bands, 29 to 48

In this species, as in *Laticauda colubrina*, the subcaudals average about 10 more in males than in females. Philippine specimens have a higher average of ventrals, and a much higher average number of bands.

Remarks—This species apparently does not attain as large a size as *Laticauda colubrina* Specimens are usually found about rocky seacoasts They feed largely on small eels

TABLE 49—*Measurements and scale counts of Laticauda laticaudata (Linnæus)*

No	Locality	Collector	Sex and age	Ventrals	Subcaudals	Anals
						Pairs
1831	Mindanao	E H Taylor	♂ ad	231	43	2
1419	do	do	♂ ad	228	42	2
1286	Mindoro	Marine Biological Expedition	♂ ad	242	45	2

No	Labials: Upper	Labials: Enter eye	Labials: Touch first chin shields	Preocular	Postoculars	Temporals	Bands	Scale rows	Length	Tail	Collection
									mm	mm	
1831	7	3 4	2	1	2	1+2+3	66	19	581	66	E H Taylor
1419	7	3 4	2	1	2	1+2+3	56	19	460	57	Do
1286	7	3 4	2	1	2	1+2+3	53	19	503	72	Bureau of Science

In the Philippines specimens are known from Mindanao, Sulu, Samar, and northern Mindoro The species is widely distributed

outside the Philippines, being known from the Indian Ocean, the coasts of the islands of the East Indian Archipelago, and western and southern Pacific Ocean

LATICAUDA COLUBRINA (Schneider)

PLATE 29

Coluber laticaudatus, part LINNÆUS, Syst Nat ed 10 1 (1776) 222, ed 12 1 (1776) 383
Hydrus colubrinus SCHNEIDER, Hist Amph 1 (1799) 238
Platurus fasciatus, part, DAUDIN, Hist Nat. Rept 7 (1803) 226, pl 85, fig 1, DUMÉRIL and BIBRON, Erp Gen 7 (1854) 1321
Hydrophis colubrinus SCHLEGEL, Phys Serp 2 (1837) 514, pl 18, figs 21 and 22, CUVIER, Reg Anim, Rept Atlas, pl. 36
Laticauda scutata (Laurenti) CANTOR, Cat Mal Rept (1847) 125
Platurus colubrinus GIRARD, U S Expl Exp Herp (1858) 178, PETERS, Mon Berl Ak (1877) 418; FISCHER, Jahrb wiss Anst Hamburg (1888) 18, BOULENGER, Fauna Brit India, Rept (1890) 395, Cat Snakes Brit Mus 3 (1896) 308, WALL, Mem As Soc Bengal 2 (1907–10) 186
Platurus scutatus GUNTHER, Rept Brit India (1864) 356
Platurus laticaudatus, var B, GUNTHER Cat Col Snakes (1858) 272
Platurus fasciatus var *colubrina* FISCHER, Abh Nat Ver Hamburg 3 (1856) 30
Platurus laticaudatus var *colubrina* BOETTGER, Ber Senck Nat Ges (1886) 118, Offenb Ver Naturk 25 (1885) 155
Laticauda colubrina STEJNEGER, Bull U S Nat Mus 58 (1907) 406

Description of species.—(From No 908, Bureau of Science collection, collected on Dipolod Island, Sulu Archipelago, September, 1917, by E. H Taylor.) Head large, somewhat distinct from neck, rather flattened above; rostral higher than wide, forming its broadest sutures with labials, its shortest with internasals, latter longer than wide, lying diagonally, in contact for about half their length, pointed anteriorly, prefrontals somewhat larger than internasals, separated from each other, touching nasal and preocular laterally; an azygous shield, lying between prefrontals and partially between internasals, forms a suture with frontal; latter almost twice as long as wide, produced to a long point behind; supraoculars about as wide as long, parietals wider than long, disposed diagonally, touching superior preocular; nasal single, elongate, nostril triangular, pierced in posterior part; 1 preocular touching second labial, widely separated from frontal; 2 postoculars, lower largest, 1 anterior temporal; temporal formula 1 + 2 + 3; 7 upper labials, third and fourth entering orbit; mental very small, first pair of lower labials barely in contact behind it, and followed by an azygous

postmental; lower labials small, usually not visible externally, only first 2 touching anterior pair of chin shields, which are smaller than second pair, 10 rows of scales between chin shields and first widened ventral, eye small, much less than its distance from nostril, scales in 23 to 25 rows around body, smooth, without apical pits; ventrals, 234, subcaudals, 35; anal divided, preceded by a second divided scale; tail strongly compressed, ending in a large scute

Color in life.—Above, blue traversed by 42 black bands, about 4 scales wide, on back, and covering only 1 or 2 ventrals below, separated from each other by interspaces, 5 or 6 scales wide; tail with 4 bands, the last much widened. Head with a broad black spot, a broad black stripe on side; anterior part yellowish, with a yellow streak above eye to some distance on temporal region; a yellow stripe on lower part of upper labials and at angle of mouth, a broad black stripe from end of chin along each side of neck to third ventral, separated from its fellow by a broad median yellow stripe

Measurements of Laticauda colubrina (Schneider)

	mm
Total length	1,390
Snout to vent	1,275
Tail	115
Width of head	29
Length of head	32
Depth of tail, greatest	31

Variation.—Males differ from females in having longer and thicker tails, not so strongly compressed at base, rather more triangular in cross section, and with an average of 9 more subcaudals, in medium-sized specimens, the ventrals have a double row of keels, nearly the same ventral average, with notches on anterior part of each scute The range of ventral counts in the Philippine specimens examined is from 229 to 248, of the subcaudal from 34 to 47, the scale rows vary between 23 and 25, most of the specimens having 23 rows on anterior part of body and 25 beyond the middle of the widest part; in all specimens the ventral preceding anal is divided The lower labials are bent over edge of mouth and lie for the most part horizontally, the mental is extremely small, the first pair of labials not or but barely touching a small azygous postmental This scale is distinct in all save two specimens, in which it is fused with first labial The number of black bands around body and tail varies between 43 and 59, the average being 49 In color most of the specimens are dark to grayish blue above barred

with black or brown, the width of the black bars half to three-fourths the width of the interspaces Two Sulu specimens differ from the others examined in being greenish yellow with brown bands It is significant that these two specimens have 59 bars across body Boulenger gives the limit of scale variation as follows: Ventrals, 195 to 240, average, 217, subcaudals, 30 to 45, scale rows, 21 to 25; black bands, 28 to 54.

TABLE 50.—*Measurements and scale counts of Laticauda colubrina (Schneider)*

No	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Anals
				mm	*mm*			*Pairs*
473	Bantayan	L E Griffin	♀	1,470	130	236	34	2
474	do	do	♀	1,490	140	237	37	2
475	Iwahig, Palawan	C M Weber	♂	940	130	237	45	2
476	Bantayan	L E Griffin	♂	775	97	242	46	2
477	Palawan	C Canonizado	♂	390	54	229	45	2
478	Bantayan	L E Griffin	♂	760	96	238	46	2
479	do	do	♂	456	57	236	44	2
480	Palawan	C M Weber	♂	946	135	240	47	2
908	Dipolod	E H Taylor	♀	1,390	115	234	35	2
1231	Negros	do	♀	995	100	246	36	2
1331	do	do	♀	963	110	239	36	2
1353	do	do	♂	720	90	236	44	2
1307	do	do	♂	875	105	235	44	2
1642	do	do	♀	1,430	140	238	36	3

No	Labials: Upper	Labials: Enter eye	Labials: Touch first chin shields	Azygous postnasals	Prefrontals	Preoculars	Postoculars	Temporals	Bands	Collection
473	7	3, 4	2	1	3	1	2	1+2—3	54	Bureau of Science
474	7-8	3 4	2	1	3	1	2	1+2—3	49	Do
475	7	3 4	2	1	3	1	2	1+2—3	50	Do
476	7-8	3 4	2	1	3	1	2	1+2+3	47	Do
477	7	3, 4	2	1	3	1	2	1—2+3	43	Do
478	7	3 4	2	1	3	1	2	1+2+3	49	Do
479	7	3 4	2	1	3	1	2	1+2+3	48	Do
480	7	3 4	2	(a)	3	1	2	1+2+3	43	Do
908	7	3 4	2	1	3	1	2	1+2+3	36	Do
1231	7	3, 4	2	1	3	1	2	2+2+3 1+2+3	59	E H Taylor
1331	7	3 4	2	1	3	1	2	1—2+3	59	Do
1353	7	3, 4	2	1	3	1	2	1+2+3	50	Do
1307	7	3 4	2	1	3	1	2	1—2+3	46	Do
1642	7	3 4	2	(a)	3	1	2	1+2+3	47	Do

[a] Fused

It will be seen, therefore, that Philippine specimens have an average of twenty ventrals more than the average of specimens listed by Boulenger. They differ also from other snakes of this species in the presence of the small azygous postmental and (in the males) of a double row of keels along the ventral scales with the scutes notched. I am convinced that Philippine forms represent a subspecies of *Laticauda colubrina*, whether it belongs with the typical form I am uncertain. The figure given in Cuvier [1] is very probably of this group, since it agrees in the number of stripes and in the presence of a postmental.

Remarks.—This species is abundant along the rocky coasts of the Philippines. In the Sulu Archipelago I found the snake in large numbers on small rocky islands, usually in cracks in cliffs and under rocks. A number of specimens taken rotted from lack of proper preservatives. The snakes of this species are more terrestrial than are the other poisonous water snakes. They feed wholly on fish, usually eels. When on land they are rather helpless, and may be picked up by the tail with impunity. The species is poisonous, probably deadly to man.

In the Philippines specimens are known from Samar, southern Luzon, Bantayan, Palawan, Negros, and also from the small islands of Dipolod, Tuhan, and Bubuan, in the Sulu Archipelago.

LATICAUDA SEMIFASCIATA (Reinwardt)

PLATE 3, FIG. 2, PLATE 30

Platurus semifasciatus REINWARDT, in Schlegel, Phys. Serp. 2 (1837) 516.

Hydrophis colubrina SCHLEGEL, Phys. Serp., Atlas pl. 18, figs. 18–20, Fauna Jap. Rept. (1837) 92, pl. 10.

Platurus fasciatus var. *semifasciata* FISCHER, Abh. Natur. Ver. Hamburg 3 (1856) 30.

Platurus schistorhynchus GUNTHER, Proc. Zool. Soc. London (1874) 297, pl. 45, fig. B; BOULENGER, Fauna Brit. India, Rept. (1890) 395, Cat. Snakes Brit. Mus. 3 (1896) 309; WALL, Proc. Zool. Soc. London (1903) 101, Mem. As. Soc. Bengal 2 (1907–10) 184, fig. 1.

Laticauda semifasciata STEJNEGER, Bull. U. S. Nat. Mus. 58 (1907) 409, pl. 22.

Description of species.—(From Stejnegei.) "Rostral broader than high, upper edge broad and truncate, scarcely visible from above, three internasals, one unpaired anterior adjoining the rostral, of which it is in reality only a detached portion, and two posterior normal ones broadly in contact, three prefrontals, a median pentagonal one, posteriorly broadly in contact with frontal, and two lateral ones, broadly in contact with frontal

[1] Reg. Anim. Atlas (by Duvernoy) pl. 36.

and with supraocular, frontal large, much longer than its distance from tip of snout and than the parietals, supraoculars as broad as frontal at the middle, parietals very short, not longer than broad, much shorter than frontal; nostril large, semilunar, near the middle of the long and narrow undivided nasal, no loreal, one preocular, broadly in contact with nasal; eye rather small, its vertical diameter less than its distance from edge of lip, two postoculars; temporals 2 + 3, only slightly differentiated from the adjacent scales, seven supralabials, third

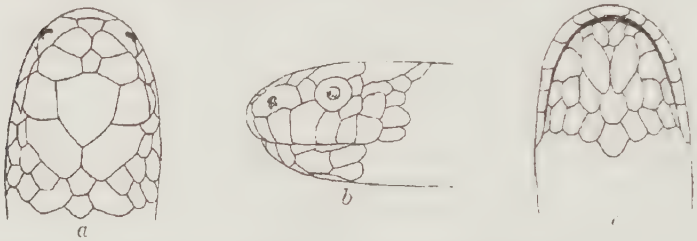

FIG. 22. *Laticauda semifasciata* (Reinwardt), after Wall. *a*, head, dorsal view; *b*, head, lateral view; *c*, chin.

and fourth largest and entering eye, first as wide above as below; seven lower labials, of which the first pair behind the small mental does not reach the edge of the lip, the labials from the third backward very low, only the first three in contact with chin-shields, of which only the anterior pair is clearly differentiated, the posterior being represented by two scales separated by one of nearly the same size; 23 rows of smooth scales without apical pits, 205 ventrals, on the posterior half of the body by a median blunt keel and a corresponding notch in the posterior edge of each scute; anal divided; 40 pairs of subcaudals.

Color (*in alcohol*).—"Bluish gray, darker above, paler underneath, with 43 dark brown rings around the body and seven on the tail, the bands being widest on the median line of the back, viz, about 3½ scales wide, and there separated by a pale interval only two scales wide, the rings are about 2½ ventrals wide on the underside and the light intervals about the same width; head uniform dark brown, with a yellowish horseshoe-shaped mark, the convexity of which rests on the prefrontals extending backward on the outer edge of supraoculars, upper postocular and upper temporals to and joining the first pale cross line on occiput a scale row behind the parietals; snout and labials dark brown like the rest of the head."

Measurements of Laticauda semifasciata (Reinwardt)

	mm
Total length	582
Snout to vent	507
Vent to tip of tail	75

"The *young* (in alcohol) are of a light bluish gray with blackish brown rings and markings. The latter as the snake grows larger become lighter and the former darker and browner, while the demarcation between them becomes more obscure until in very large specimens the markings become almost obliterated. In the larger specimens therefore the dark gray cross markings correspond to the whitish cross markings in the young.

"This species grows to a considerable size. The largest specimen in our collection (No. 5546) measures 1,097 mm. in total length, with a tail 136 mm. long, while the type measures, respectively, 1,118 mm. and 140 mm.

"*Variation*.—There is very little variation in the scale formula proper, for only in one specimen (No. 5546) have I seen 4 temporals on one side, the normal number of 3 occurring on the other. In eastern specimens the number of ventrals is rarely as low as 188, but ranges usually between 197 and 212, while the subcaudals vary between 32 and 43 pairs. Sometimes anomalies are found in the internasals; thus in No. 10*b* of the Imperial Museum, Tokyo, there is a small unpaired shield behind the detached part of the rostral, broadly in contact with it and with the unpaired median prefrontal, and in our No. 7515 there are two unsymmetrical shields detached from the left internasal, as shown in fig. 331."

Remarks.—This species is included in the Philippine fauna on the strength of a specimen in Silliman Institute, Dumaguete, Oriental Negros, at which town it was captured. The specimen was examined by me in 1917, but I was unable to make an exhaustive study of it. It is very large and must measure nearly 2 meters in length.

Genus DISTEIRA Lacépède

Hydrus, part, Schneider, Hist. Amph. 1 (1799) 233, Wagler, Syst. Amph. (1830) 165.

Hydrophis Daudin, Hist. Nat. Rept. 7 (1803) 372, Gray, Cat. Vip. Snakes (1849) 49, Dumeril and Bibron, Erp. Gen. 7 (1854) 1341, Gunther, Rept. Brit. India (1864) 360.

Distira Lacépède, Ann. Mus. Hist. Nat. Paris 4 (1804) 210, Stejneger, Bull. U. S. Nat. Mus. 58 (1907) 418.

Leioselasma Lacépède, Ann. Mus. Hist. Nat. Paris 4 (1804) 210.

Enhydris Wagler, Nat. Syst. Amph. (1830) 166.

Microcephalophis Lesson, in Belanger's Voy. Indes Orient., Rept. (1834) 320, Atlas, Rept. pl. 3.

Lwpata GRAY, Zool Misc (1842) 60
Atuia GRAY, Zool Misc (1842) 61
Noterophis GISTEL, Naturg Thierr (1884) ix
Clutulia GRAY, Cat Vip Snakes (1849) 56
Kerilia GRAY, Cat Vip Snakes (1849) 57
Thalassophis SCHMIDT, Abh Natur Ver Hamburg 2 (1852) 75
Distira COPE, Bull U S Nat Mus 32 (1887) 61, BOULENGER, Cat Snakes Brit Mus 3 (1896) 285

Maxillary longer than ectopterygoid, not extending forward as far as palatine; poison fangs large, followed by several grooved teeth, anterior mandibular teeth sometimes grooved, head usually smaller than body, nostrils superior, valved, pierced in a single nasal, which is in contact with its fellow, head shields large; preocular present; loreal usually absent; body long, slender anteriorly, frequently compressed, ventrals more or less distinct, always small

There are few if any greater problems in herpetology than the proper classification of sea snakes, particularly those belonging to the genus *Disteira* Boulenger* divided the group into two genera, *Hydrophis* and *Distira*, recognizing in all forty species out of a total of nearly ninety described forms Wall,† whose monograph on sea snakes appeared in 1911, fifteen years after Boulenger's work, relegates thirty-nine of the species, recognized by Boulenger, under a series of seventeen species of the genus *Distira* and one to a different genus, and adds to his list two other species, one of which (*Distira neglecta*) he himself described, and the other (*Distira ocellata*) is from a synonym of Boulenger's *Distira ornata* Other species have since been described It is obvious that the status of species of this genus is rather unstable

Just how many species should be included in the Philippine fauna is a matter of considerable doubt *Hydrophis abbreviatus* Jan, *H brevis* Jan, and *H. loreata* are all referable to *Lapemis hardwickii* Gray *Hydrophis semperi* Garman and *Hydrophis westermanni* Jan are very probably referable to *Disteira cyanocincta*, and *Disteira longiceps*, recorded by Griffin from Manila Bay, is probably *Disteira ornata* Thus we are left with six species reported as occurring in the Philippines These are *Disteira fasciata*, *D cincinnatii*, *D ornata*, *D cyanocincta*, *D spiralis*, and *D cyanosoma*

I strongly suspect that Peters's record of *Hydrophis fasciatus* will have to be referred to *Disteira cincinnatii*, as has been done

* Cat Snakes Brit Mus 3 (1896) 271-299
† Mem As Soc Bengal 2 (1911) 169-251

TABLE 51.—*Scale counts of the Philippine species of Distira*

VENTRALS

Species	Specimens	Male limits	Average	Female limits	Average	Species limits	Species average
D. cincinnata	20	320-365	345	323-394	373	320-394	361
D. ornata	16	223-243	232	242-278	261	223-278	245
D. cyanocincta	17	330-356	336	350-398	360	326-398	348
D. cyanosoma[a]	1	213 (?)					

SCALE ROWS

Species	Neck: Male limits	Neck: Average	Neck: Female limits	Neck: Average	Neck: Species average	Body: Male limits	Body: Average	Body: Female limits	Body: Average	Body: Species average
D. cincinnata	27-28	27.5	21-32	27	27	41-44	43	38-46	42	42
D. ornata	30-34	33	34-38	34	34	34-45	38	42-46	44	41
D. cyanocincta	29-31	30	28-33	30	30	36-39	37.5	36-40	39	38
D. cyanosoma[a]	33					37				

Species	Preanals: Males	Preanals: Females	Head scales: Upper labials	Head scales: Labials enter eye	Head scales: Temporals	Head scales: Preoculars	Head scales: Postoculars	Head scales: Prefrontal touches second labial
D. cincinnata	4 rarely 5	4	6 rarely 7 or 8	3-4	1	1	1 rarely 2	Yes
D. ornata	6	4	7-8	3, 4 rarely 3-4-5	2 rarely 3	1	2	Yes, rarely no
D. cyanocincta	2 or 4	2 or 4	7 rarely 8	3-4 or 3-4-5	2 rarely 3	1	2	Yes
D. cyanosoma[a]			8	3-4	2-3	1	2	Yes

[a] From type

with Boettger's record for the same species There appears to be but a single record for *D. spiralis* from Manila, that of Jan. I strongly suspect that that specimen is an abnormal *D. cyanocincta* with a single anterior temporal As a result of this elimination, four species remain whose status is stable, and which undoubtedly occur in the Philippines These are *D cyanocincta*, *D cincinnatii*, *D. cyanosoma*, and *D ornatus*. The last-named species belongs to the variety *D ornata* of Gray Table 51 will serve as a key for species found in the Philippines.

DISTEIRA CINCINNATII Van Denburgh and Thompson

Disteira cincinnatii VAN DENBURGH and THOMPSON, Proc Cal Acad Sci IV 3 (1908) 41, pl 7, GRIFFIN, Philip Journ Sci § D 6 (1911) 264

Description of species.—(From No. 1327, E. H Taylor collection; collected in Manila Bay, October, 1914, by E. H Taylor) (Male) Body compressed, tail flattened; head small, not distinct from neck; depth of neck contained in greatest body depth nearly three times, head tapering, rather convex above, eyes large; rostral about as deep as broad, distinctly visible from above; internasal absent, nasals large, nearly quadrangular, longer than wide, nostril pierced near its outer posterior edge

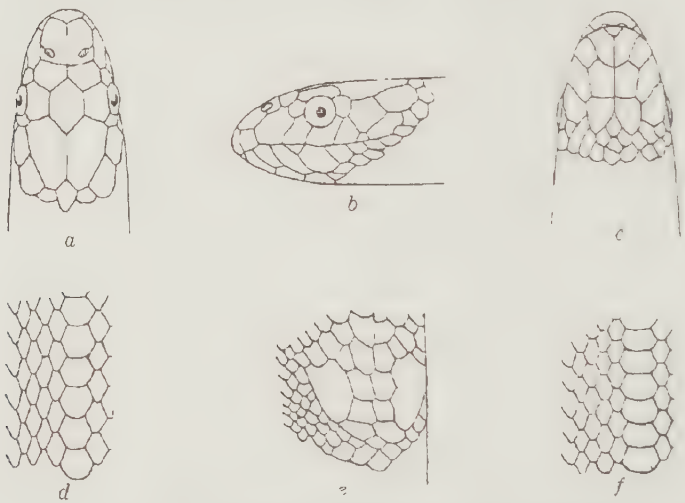

FIG 23 *Disteira cincinnatii* Van Denburgh and Thompson, after Van Denburgh and Thompson, *a*, head dorsal view, *b*, head, lateral view *c* chin, *d*, anterior ventrals, *e*, anal region *f*, ventrals

and connected with outer and posterior sutures by shallow grooves; prefrontals broader than deep, touching second labials laterally, their mutual suture little less than one-third that between nasals; frontal small, longer than broad, as wide as supraoculars and scarcely longer; parietals elongate, in contact for three-fourths of their length; upper labials 6 (5 on right side), first small, second largest, fifth triangular, third and fourth broadly entering eye, preocular small, 1 postocular; temporals 1+1, 8 lower labials (9 on left side), fourth a very small scale widely separated from chin shields, mental very small; first pair of labials of same size as second chin shields; 3 labials in contact with anterior chin shields, which are shorter and wider than second pair, latter in contact, bordered by 2 labials; 28 scale rows around neck, 40 around widest part of body, 32 around widest part of tail; scales subimbricate anteriorly but juxtaposed posteriorly each with a small indistinct tubercle, ventrals, 367, about twice as wide as adjoining scale rows, the last 5 divided, 1 anals, a small inner pair and a large outer pair, 64 subcaudals

Color.—Head entirely black, neck black with narrow bars not meeting below, body brownish black, the bars of yellowish white growing wider on sides, meeting or barely failing to meet below, very much obscured dorsally, tail black with 5 bars of light color, last 2 scarcely formed; 47 light bands on body, 5 on tail.

Measurements of Distira cincinnata Van Denburgh and Thompson

	mm.
Total length	645
Snout to vent	575
Tail	70
Length of head	10.5
Width of head	6
Width of neck	6
Depth of body	19
Depth of tail	11

Variation.—Van Denburgh and Thompson give measurements and scale counts for twenty specimens of this species. The scale counts average as follows Neck rows, 27; body, 42, ventrals, 361 The average number of bands on body is 45, on tail, 4. These authors report the following differences between this species and *Distira fasciata* Schneider and *D. brookii* Boulenger:

This species is closely related to *D fasciata* Schneider and *D brooki* Boulenger From *D fasciata* it differs in being much stouter, in the narrow portion of the neck being shorter, in the lower average * number of gastrosteges, in the arching of the maxilla between the fang and the first tooth and the absence of an acute apex in front of the fangs, and in the less acute posterior angle of the frontal plate From *D brooki* it differs in the lower average number of gastrosteges, in the character of the scales on the sides of the body, which are mostly regular hexagons or are a trifle broader than long, where in *D brooki* the upper and lower angles of the scales are very acute and the laterals are twice the size of the scales on the back In *D brooki* the snout is much broader

Remarks.—The type is from Manila Bay, collected in 1906 by Thompson. The species is not rare apparently, but is not frequently taken in fishing nets, due to its small size. It is poisonous, but due to the extremely small size of the head probably could not be considered deadly to man. It is said to feed on small eels Known only from Manila Bay.

DISTEIRA ORNATA (Gray)

Aturia ornata GRAY, Zool Misc (1842) 61
Chitulia mornata GRAY, Cat Vip Snakes (1849) 56
Disteira ornata, part, BOULENGER, Cat Snakes Brit Mus 3 (1896) 290, sp b and d
Hydrophis ornatus, part, GUNTHER, Rept. Brit India (1864) 376, pl 25, fig v
Disteira ornata mornata WALL, Mem As Soc Bengal 2 (1911) 169–251
Disteira ornata GRIFFIN, Philip Journ Sci § D 6 (1911) 265

Description of species.—(From No. 784, Bureau of Science collection, collected in Manila Bay, 1911, by T Bangis) Body strongly compressed; head elongate, about one-fifth wider than neck, rostral wider than high, doubly arched below, with a slight suture (anomalous) entering from above· suture with internasals wider than that with labials, no internasals; nasals elongate, the nostril pierced in outer posterior part, a suture issuing from lower side and continuing to second labial, a dim groove from posterior part of nostril to prefrontal, prefrontals wider than deep, the suture between them one-third that between nasals, in contact laterally with second labial, frontal longer than its distance from rostral, more than one and a half times as long as wide, much shorter than parietals, one and a half times as wide as supraoculars, parietals elongate, twice as long

* Average in twenty specimens of *D cincinnati* is 361, while in twenty-six of *D fasciata* it is 417

as wide; 1 preocular in contact with 2 labials; 2 postoculars; 2 anterior temporals; 8 upper labials, second largest, third and fourth entering eye, sixth, seventh, and eighth very small; mental small, triangular, wedge-shaped; 9 lower labials, last 2 very small (on right side fourth is broken and two small parts border mouth); first pair of labials broadly in contact, partially inserted between anterior chin shields; latter in contact posteriorly; second pair distinct, separated from each other by 2 scales; 3 labials border first pair, and 2 or 3 the second pair; scales juxtaposed, usually six-sided, each with a small tubercle;

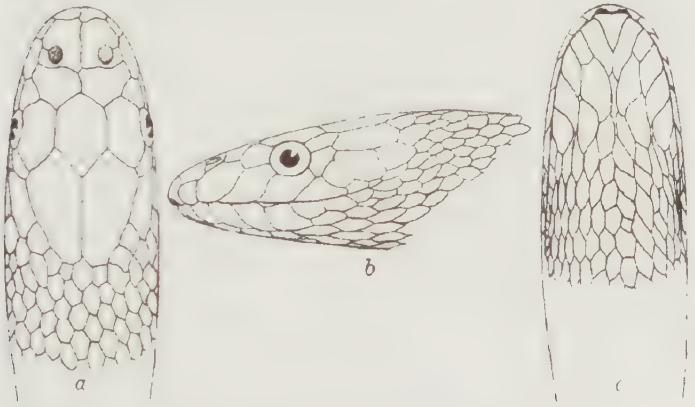

FIG. 24. *Dasteira ornata* (Gray); drawing of a specimen from Manila Bay; *a*, head, dorsal view; *b*, head, lateral view; *c*, head, ventral view. × 2.

34 scale rows on neck; 41 on widest part of body; 25 on widest part of tail; ventrals, 243, somewhat enlarged but frequently divided on posterior part of body; anus bordered by 3 pairs of scales, the outer pair largest; ventrals grooved, usually with a tubercle on each side; 44 subcaudals, not differentiated; tail strongly compressed, widened at base behind anus.

Color in life.—Above grayish blue, neck traversed by a few, very narrow, lighter lines; the blue extends down about halfway on side, below which the color is uniform yellowish white; tail grayish with eight dim, narrow, yellowish white bars; the division between dorsal and ventral color usually a straight line, but in the posterior part the demarcation line is zigzag; head slate blue; rather lavender on chin.

Measurements of Disteira ornata (Gray)

	mm
Total length	763
Snout to vent	676
Tail	87
Length of head	30
Width of head	12
Depth of neck	10
Depth of body	20
Depth of tail	15 5

Variation.—The chief variation is sexual, as the table shows Males are slenderer, with tails less compressed at base and somewhat longer; they are much more strongly tuberculate than females. The males average 231 ventrals, 33 scale rows on neck; 39 scale rows on widest part of body, and 24 around tail. Females average 262 5 ventrals; 34 6 scale rows on neck, 44 on body; and 25 on tail The females have only 2 pairs of anals, instead of 3 pairs as in the males, and the nasal scale is, usually, entirely broken in two Several adult females show no evidence of tuberculation on scales The specimen figured by Gunther * (the type of Gray's *Clutulia inornata*) is typically identical with Philippine specimens, as characterized by the

TABLE 52.—*Measurements and scale counts of Disteira ornata (Gray)*

No	Locality	Collector	Sex	Length	Tail	Head length	Head width	Neck width	Depth, body	Depth, tail
				mm	mm	mm	mm	mm	mm	mm
778	Manila Bay	T Bangis	♂	720	88	28	13	11 5	24 5	14 5
779	do	do	♀	895	72	27	12	10	28	14
780	do	do	♀	795	77	27	13	11	31	16
781	do	do	♀	720	82	27	13	10	32	14
782	do	do	♂	510	57	20	10	8	16	10
783	do	do	♀	740	73	27	12	10 5	35	14
784	do	do	♂	763	87	30	12	10	20	15 5
785	do	do	♀	656	71	24	14	11	22	14
786	do	do	♂	510	56	20	10	9	19	12
787	do	do	♂	802	94	28	12 5	11 5	24	16
819	do	E H Taylor	♂	365	43	15	8	6	14	6
820	do	do	♀	420	48	20	10	9	17	11
821	do	do	♂	350	45	16	7	5 6	11	9
822	do	do	♂	320	(a)	18	8 5	6	17	
825	do	do	♂	395	48	18	8 5	7	16	12
130	do	do	♀	390	49	19	7 5	7	15	9

[a] Mutilated

* Rept. Brit India (1864) pl 25, fig v

TABLE 52.—*Measurements and scale counts of Distira ornata (Gray)*—Continued

No.	Ventrals	Subcaudals	Scale rows: Neck	Scale rows: Body	Scale rows: Tail	Anals	Labials: Upper	Labials: Lower	Labials: Enter eye	Labials: Touch chin shields
778	227	43	33	38	24	6	7	9	3, 4	3
779	259	39	35	44	26	4	7	9	3 4	3
780	260	35	35	45	27	4	8	9-10	3 4	3
781	242	42	34	42	22	1	7 8	9	3, 4	3
782	229	10	34	40	23	6	7	8	3, 4	3
783	273	39	34	45	21	4	7	9	3, 4	3
784	243	44	34	41	25	6	8	9	3 4	3
785	275	35	36	45	26	4	8	9	3 4	3
786	223	42	35	38	25	6	7	9-8	3 4	3
787	234	43	31	37	23	6	8	9	3 4	3
819	224	42	30	34	----	6	7	8	3 4	3
820	252	44	35	43	----	4	8	9	3 4	3
821	242	42	32	38	----	6	7-8	8	3 4	3
822	239	(a)	33	44	----	6	8	10	3 4	3
825	231	41	34	38	----	6	8	9	3, 4 5	3
130	264	40	34	45	26	4	8	9	3 4	4

No.	Anterior temporals	Nasal divided	Prefrontals touch second labial	Second pair of chin shields separated	Collection
778	3	Partially	On one side	Yes	Bureau of Science
779	2 3	Yes	On one side	do	Do
780	3	do	No	do	Do
781	2	do	Yes	do	Do
782	2	Partially	do	do	Do
783	2	Yes	do	do	Do
784	2	Partially	do	do	Do
785	2	Yes	do	do	Do
786	2-2	Partially	do	do	Do
787	2	do	do	do	Do
819	3	Partially	do	do	E. H. Taylor
820	2	Yes	Yes	do	Do
821	2	Partially	do	do	Do
822	2	do	do	do	Do
825	2-3	do	Yes	do	Do
130	2	Yes	do	do	Do

[a] Mutilated

upper labials, the separation of the second pair of chin shields, the temporals, and the narrow lower labials. No other variety of *Distira ornata* appears to have been discovered in the Philippines. I strongly suspect that this Philippine form merits specific designation. In young males the narrow whitish bands on the neck are evident, and they sometimes persist in adult specimens. Young females are colored like the adults.

Remarks.—This species is common in Manila Bay, where it is known as *malabasahan* and *calabucab* It feeds for the most part on eels Specimens kept in the Bureau of Science aquarium when very hungry will eat small dead fish They rarely live more than three months in captivity

The species is poisonous, probably deadly to man Known from Manila Bay and Palawan Widely distributed from southeastern Asia throughout the Malay Archipelago

DISTEIRA CYANOCINCTA (Daudin)

Hydrophis cyanocinctus DAUDIN, Hist Nat Rept 7 (1803) 383, PETERS, Mon Berl Ak (1872) 852, pl 1, fig 2, FAYRER, Thanatoph Ind (1874) pl 23, MURRAY, Zool Sind (1884) 391, BOETTGER, Offenb Ver Nat (1888) 89

Leioselasma striata LACÉPÈDE, Ann Mus Hist Nat 4 (1804) 198, 210, pl 57, fig 1

Enhydris cyanocinctus MERREM, Tent Syst Amph (1820) 141

Enhydris striatus MERREM, Tent Syst Amph (1820) 141

Hydrus cyanocinctus BOIE, Isis (1827) 354

Hydrophis striata SCHLEGEL, Fauna Japon, Rept (1837) 89, pl 7, Phys Serp 2 (1837) 502, pl 18, figs 4 and 5; FISCHER, Abh Naturw Hamburg 3 (1856) 41, OKADA, Cat Vert Japan (1891) 69

Hydrus striatus, part, CANTOR, Cat Mal Rept (1847) 126

Hydrophis subannulata GRAY, Cat Vip Snakes (1849) 54

Hydrophis chittal RAFINESQUE, Am Month Mag (1817) 432

Hydrophis aspera GRAY, Cat Vip Snakes (1849) 55, GUNTHER, Rept Brit India (1864) 365

Hydrophis cyanocincta, part, GUNTHER, Rept Brit India (1864) 367

Hydrophis trachyceps, THEOBALD, Cat Rept As Soc Mus (1868) 70

Hydrophis crassicollis ANDERSON, Journ As Soc Bengal 40 (1871) 19

Hydrophis westermanni JAN, Rev Mag Zool (1859), Icon Gén (1872) livr 39, pl 5, fig 1, Elenco Syst Ofid (1863) 111

Hydrophis phipsoni MURRAY, Journ Bombay Nat Hist Soc 2 (1887) 32, pl

Hydrophis (Hydrophis) cyanocinctus BOETTGER, Zool Anz 11 (1888) 396 (Philippines)

Hydrophis taprobanica HALY, Taprobanian 2 (1887) 107

Distira cyanocincta BOULENGER, Fauna Brit India, Rept (1890) 410, SCLATER, Journ As Soc Bengal 60 (1891) 247, BOETTGER, Ber Offenb Ver Nat (1892) 90, BOULENGER, Cat Snakes, Brit Mus 3 (1896) 294, WEST Proc Zool Soc London (1895) 823, pl 66, figs 1, 8, 17, WALL, Proc Zool Soc London (1903) 96, 101, BOETTGER, Ber Senck Nat Ges (1898) xxxvm (1905) 170 (Philippines)

Distira cyanocincta STEINEGER, Bull U S Nat Mus 58 (1907) 428, Proc U S Nat Mus 38 (1911) 111

Description of species.—(Adult male) Head not distinct from neck, rostral broad, pentagonal, well visible above, forming nearly equal sutures with nasals and labials, nostril pierced

in the outer posterior part of nasal with a suture reaching from it to second labial; nasals large, in contact the greater part of their length, prefrontals broader than long, touching second labials, frontal longer than wide, not as long as its distance from rostral, wider than supraoculars, parietals longer than frontals, touching superior postocular and bordered by 3 temporals, first largest, 1 small preocular; 2 postoculars, 8 upper labials, second very large, touching nasal, prefrontal, and pre-

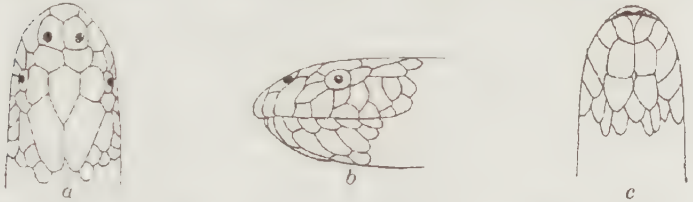

FIG 25 *Distena cyanocincta* (Daudin), after Wall *a* head, dorsal view *b* head lateral view, *c* head ventral view

ocular, third, fourth, and fifth entering orbit, seventh smallest, 2 anterior temporals, the lower followed by the eighth upper labial, 9 lower labials, the 2 anterior largest, touching first pair of chin shields which are smaller than second pair; latter in contact half their length, lower labials from third to ninth small, separated from chin shields by 3 large scales, the third of which is slightly separated from the second pair of chin shields; scales imbricating, pointed more or less posteriorly on anterior part of body, truncate on posterior part of body, each scale with a distinct keel or tubercle, scales largest lateroventrally, ventrals small, usually a half wider than adjoining scale rows, equipped with 2 or more tubercles, ventrals, 237; anals, 2 pairs, outer largest, not in contact, subcaudals, 49, 31 scale rows on neck, 39 on body, 26 on tail; scute on tip of tail large

Measurements of Distena cyanocincta (Daudin)

	mm
Total length	1,080
Snout to vent	992
Tail	88
Length of head	25
Width of head	13
Depth of neck	13
Depth of body	28
Depth of tail	23

Color in life—Above dull blue, the body traversed by 52 yellow-white bars, very dim dorsally, distinct ventrally; tail with

5 bars, only the first 2 extending to underpart of tail Head greenish black, throat and neck black, the black interrupting the light bars from above.

Variation.—Variations in scale counts evident in Philippine specimens are. Ventrals, 320 to 398; scale rows on neck, 29 to 33, scale rows on body, 36 to 40 For extra-Philippine specimens, Boulenger gives the following limits. Ventrals, 281 to 385; scale rows on neck, 27 to 33; scale rows around body, 39 to 45

Specimen No. 798, Bureau of Science collection, has only 2 labials entering eye, but there is a fusion of the fourth and fifth labials; No 800, Bureau of Science collection, has the sixth labial broken, making 3 anterior temporals, a specimen consisting merely of the head of a very large snake has the same arrangement of temporals as the preceding, only 2 labials enter the eye, and there are only 7 upper labials This head measures 43 millimeters in length, and 29 in width. No. 797, Bureau of Science collection, has 3 anterior temporals, the fifth labial of this specimen is broken transversely, the upper part entering eye

TABLE 53.—*Measurements and scale counts of Disteira cyanocincta (Daudin)*

No	Sex	Locality	Collector	Length	Tail	Ventrals	Subcaudals	Scale rows	
								Body	Neck
				mm	*mm*				
797	♀	Manila	T Bangis	1 255	91	358	45	41	31
798	♀	do	do	945	(a)	356	- -	36	29
800	♀	do	do	670	56	350	48	40	30
1102	♀	do	E H Taylor	1 140	84	352	46	40	28
1103	♂	do	do	1 073	98	356	53	36	29
1104	♂	do	do	476	43	356	49	37	28
[b] 1105									31

No	Upper labials	Lower labials	Labials enter eye	Preoculars	Postoculars	Temporals	Anals	Bands	Collection
797	7	8-9	3,4,5	1	2	2+2	2	63	Bureau of Science
798	7	8-8	3 4 3 4	1	2	2+2	2	58	Do
800	8	9-8	3 4 5	1	2	3—3	4	54	Do
1102	8	8-9	3,4,5	1	2	2+2	4	57	E H Taylor
1103	8-7	8-9	3 4 5	1	2	2+2	4	68	Do
1104	7	9-9	3 4	1	2	2+2	6	68	Do
[b] 1105	7	9-10	3 4	1	2	3+3	-------	--	Do

[a] Mutilated [b] Head only

Remarks.—This species is fairly common about Manila Bay. Dead snakes are frequently found along the beach where they

have been killed by fishermen A few specimens have been kept alive at various times in the Bureau of Science aquarium

FIG 26 *Disteira cyanocincta* (Daudin), after Jan's *D westermanni* *a* head lateral view *b* head, lateral view (variation)

It is significant that this species enters Lake Taal, a fresh-water lake connected with the sea by a river only a few kilometers long From this locality Semper obtained specimens, one of which became the type of Garman's *Hydrophis semperi* A careful reading of Garman's description "seventh [labial] smallest, and separated from the temporal by a large pentagonal plate" shows the presence of 2 temporals, the "plate' apparently being the second temporal

DISTEIRA CYANOSOMA Wall

Disteira cyanosoma WALL, Journ Bombay Nat Hist Soc 22 (1913) 516

Description of species —(After the type description) Rostral broader than high, in contact with 4 shields, nasals in contact with each other, suture from nostril passing to second supralabial; 2 prefrontals in contact with second supralabial, frontal touches 6 shields, frontalparietal sutures rather the longest; parietals entire, 1 preocular; 2 postoculars, 2 temporals on right side, 3 on left side, all longer than high; 8 supralabials, third and fourth touching the eye, sixth and seventh small, eighth elongate; 2 pairs of chin shields, subequal, the posterior pair quite separated by small scales; 4 lower labials, fourth largest, a cuneate scale wedged between third and fourth; 33 scale rows on neck, 37 in middle of body, 35 a short distance in front of anus, scales subimbricate, faintly tuberculate, ventrals, 213 (?)* enlarged, entire, not quite twice the width of the last row of scales

Color —Uniformly bluish, deeper dorsally, paler on sides and on belly

Remarks —No measurements of this species are given, since the number of scale rows on the neck is only four less than in midbody it is safe to suppose that the species does not belong to the small-headed, narrow-necked group of this genus

The species was sent from the Philippines, but the exact locality is not recorded Wall states that it bears a pronounced

* Wall's query

superficial resemblance to *Enhydrina valakadyn* (Boie). I have found no specimens that are referable to this species.

Genus LAPEMIS Gray

Enhydris, part, MERREM, Tent Syst Amph (1820) 140 (not of Latreille 1802)

Hydrophis part, SCHLEGEL, Phys Serp 2 (1837) 512, DUMÉRIL and BIBRON, Erp Gen 7 (1854) 1341, JAN, Elenco Syst Ofid (1863) 109, GUNTHER, Rept Brit India (1864) 360

Lapemis GRAY, Ill Ind Zool 2 (1834) pl 87, fig 2, Zool Misc (1842) 60, Cat Vip Snakes (1849) 43, STEJNEGER, Bull U S Nat Mus 58 (1907) 435

Pelamis, part, FISCHER, Abh Naturw Hamburg 3 (1856) 61.

Enhydris BOULENGER, Fauna Brit India, Rept (1890) 393, Cat Snakes Brit Mus 3 (1896) 300, WALL, Mem As Soc Bengal 2 (1907–10) 246

"Maxillary as long as the ectopterygoid, extending forwards as far as the palatine, with two large poison-fangs and 2 to 4 small feebly-grooved teeth Nostrils superior; head-shields large, nasals in contact with each other; a præocular, loreal present or absent Body short and stout, scales hexagonal or squarish, juxtaposed; ventrals very feebly developed, if at all distinct" (*Boulenger*)

Two species of this genus are known, *Lapemis curtus* Shaw, confined to the coasts of India and Ceylon, and *Lapemis hardwickii* Gray, which is found in the Bay of Bengal and the waters bounding the Malay Peninsula and Malay Archipelago. The latter species is the commonest water snake in Manila Bay, as many as a hundred being brought in with a single haul of a net in the shallow water along the coast The snakes may be seen swimming in the water or coming to the surface to breathe about the swimming rafts on Pasay Beach

LAPEMIS HARDWICKII Gray

Lapemis hardwickii GRAY, Ill Ind Zool 2 (1834) pl 87, fig 2, Cat Vip Snakes (1849) 44, STEJNEGER, Bull U S Nat Mus 58 (1907) 435

Hydrophis pelamidoides SCHLEGEL, Phys Serp 2 (1837) 512, Atlas, pl 18, figs 16, 17, Fauna Jap, Rept (1838) pl 9, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 1345; FISCHER Abh Naturw Hamburg (1856) 64, pl 3, JAN, Icon Gén (1872) livr 41 pl 3, fig 1

Lapemis loreatus GRAY, Ann & Mag Nat Hist 11 (1843) 46

Hydrophis hardwickii GUNTHER, Rept Brit India (1864) 380, pl 25, fig W, ANDERSON, Journ Linn Soc 21 (1889) 348

Hydrophis loreata GUNTHER, Rept Brit India (1864) 380, BOETTGER, Zool Anz (1888) 396

Hydrophis jayeriana, ANDERSON, Journ As Soc Bengal 40 (1871) 19

Hydrophis problematicus JAN, Rev & Mag. Zool (1859) 150 (Manila?).

Hydrophis brevis JAN, Elenco Sist. Ofid. (1863) 109 (Manila)
Hydrophis abbreviatus JAN, Elenco Sist. Ofid. (1863) 109 (Manila); Icon. Ophid. (1872) livr. 40, pl. 4, fig. 2.
Enhydris hardwickii BOULENGER, Cat. Snakes Brit. Mus. 3 (1896) 301; Fauna Brit. India, Rept. (1890) 397; WALL, Mem. As. Soc. Bengal 2 (1907–10) 247.
Hydrophis (Thalassophis) loreatus BOETTGER, Zool. Anz. 11 (1888) 396 (Mindanao and Luzon).

Description of species.—(From No. 636, Bureau of Science collection; collected in Manila Bay, by T. Bangis.) (Adult female.) Head moderate; nostrils superior; rostral not visible from above, slightly higher than broad, with a short suture entering from above; nasals large, longer than wide, forming a long mutual suture; a suture runs from nostril to anterior part of second labial, and a second from nostril to prefrontal, completely dividing the scale; prefrontals much wider than long, touching second labial, their mutual suture as long as their sutures with frontal; frontal longer than wide, pointed sharply

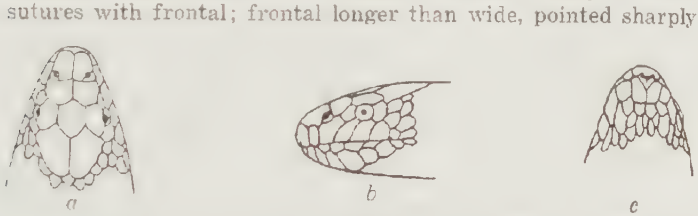

FIG. 27. *Lapemis hardwickii* GRAY; after GÜNTHER; *a*, head, dorsal view; *b*, head, lateral view; *c*, chin.

behind, distinctly shorter than its distance from end of snout; supraoculars longer than broad; parietals elongate, very much longer than broad, touching postocular on one side only; 7 upper labials, the second largest and highest, touching anterior part of nasal; third and fourth labials enter eye, sixth and seventh small, wider than high; 2 large anterior temporals followed by 3 smaller ones; 3 pairs of small chin shields, only the first pair in contact; second and third pairs separated by 3 rows of small scales; mental small, triangular; third labial separated from edge of mouth by 2 small scales; fourth lower labial largest; posterior lower labials bent over edge of mouth; scales on body six-sided, with a distinct keel on anterior part of each; scales in 34 rows around neck; 41 rows around deepest part of body, 26 rows around deepest part of tail; ventrals about 186, small, keeled, scarcely discernible from body scales, usually with 2 tubercular keels; subcaudals, 33; 4 anal scales, 2 outer largest; anals preceded by several small differentiated scales.

Color in alcohol.—Above, banded with bluish black and light bands, about 39 of each, from head to tail; on back the black bands are 5 scales wide, the light bands about 2 scales wide; the black bands narrow rapidly, and midway on sides they are only 2 or 3 scales wide, the white bands widen on sides proportionally as the black bands decrease in width, the black bands widen again on belly; tail largely black, the white bands not extending more than halfway down on sides of tail.

Measurements of Lapemis hardwickii Gray

	mm.
Total length	762
Snout to vent	689
Tail	73
Depth of neck	23
Greatest depth of body	43
Depth of tail	24
Length of head	34
Width of head	25

Variation.—A remarkable amount of variation is evident in this species, and the sexes differ markedly. Boettger gives the following variation in scale counts. Males: Ventrals, 135 to 168, average, 153; scale rows, 25 to 31, average, 28. Females: Ventrals, 186 to 237, average, 202; scale rows, 29 to 36, average, 31. In specimens that I examined the ventrals varied between 130 and 230; and the scale rows, between 24 and 41.

Of about one hundred fifty specimens examined about sixty had one or more loreals present on one or both sides (*Hydrophis loreata*). The loreal is usually formed from the anterior part of second labial, sometimes it is fused with preocular, in which case the latter touches nasal; sometimes the loreal fuses with the lower part of nasal, sometimes with a second loreal formed from the upper part of first labial. Not infrequently specimens are found with one or two loreals on one side and none on the other. The frontal varies greatly in length, sometimes it is as long as its distance from snout, at other times it is scarcely half as long. One or two preoculars are present. The suture from nostril goes with about equal frequency to first and second labials; there are usually two anterior temporals but not infrequently the temporals are fused into one scale.

The markings are variable also. The number of dark bands varies between 28 and 41; they may encircle body or may be joined on back not extending the full length of side; sometimes the bands are joined by a black line following the ventrals; the bands may be wide or narrow.

Remarks.—The species is incredibly numerous in Manila Bay. I have kept as many as fifty living specimens in the aquarium at one time. They do not do well in captivity and seldom live for more than a few months. To obtain the proper sort of food for them is a problem.

Most of the Philippine records for this species are for Manila. I have taken specimens at Hinigaran, on Negros. It probably occurs with greater or less frequency on the coasts of all of the islands. Outside of the Philippines it occurs from the Bay of Bengal to New Guinea.

Genus PELAMYDRUS Stejneger

Hydrus, part, Schneider, Hist. Amph. 1 (1799) 238.
Pelamis, part, Daudin, Hist. Rept. 7 (1803) 357, Fischer, Abh. Naturw. Hamburg 3 (1856) 61.
Pelamis Fitzinger, Neue Class. Rept. (1826) 29, Wagler, Syst. Amph. (1830) 165, Gray, Cat. Vip. Snakes (1849) 41, Duméril and Bibron, Erp. Gen. 7 (1854) 1333, Gunther, Rept. Brit. India (1864) 382, Boettger, Ber. Senck. Nat. Ges. (1886) 119, Casto de Elera, Cat. Fauna Filipinas 1 (1895) 443.
Hydrophis, part., Schlegel, Phys. Serp. 2 (1837) 488, Jan, Elenco Syst. Ofid. (1863) 109.
Thalassophis, part., Schmidt, Abh. Naturw. Hamburg 2 (1852) 75.
Hydrus Boulenger, Fauna Brit. India, Rept. (1890) 397, Cat. Snakes Brit. Mus. 3 (1896) 266.
Pelamydrus Stejneger, Proc. U. S. Nat. Mus. 38 (1911) 111.

"Maxillary longer than the ectopterygoid, not extending forwards as far as the palatine; poison-fangs rather short, followed, after a short interspace, by 7 or 8 solid teeth. Nostrils superior; snout long, head-shields large, nasals in contact with each other; a præocular, no loreal. Body rather short, scales hexagonal or squarish, juxtaposed, no distinct ventrals." *(Boulenger.)*

Widely distributed throughout the Indian Ocean, Malay Archipelago, and the Pacific Ocean. Only one species is recognized.

PELAMYDRUS PLATURUS (Linnæus)

Plate 31, fig. 1.

Anguis platura Linnæus, Syst. Nat. ed. 12 1 (1766) 391.
Hydrus bicolor Schneider, Hist. Amph. 1 (1799) 242, Cantor, Cat. Mal. Rept. (1847) 135, Cuvier, Reg. Anim. Rept. Atlas 6, pl. 36.
Hydrophis platura Latreille, Hist. Nat. Rept. 4 (1802) 197.
Pelamis bicolor Daudin, Hist. Nat. Rept. 7 (1803) 366, Gray, Cat. Vip. Snakes (1849) 41, Duméril and Bibron, Erp. Gén. 7 (1854) 1335, Gunther, Rept. Brit. India (1864) 382, Krefft, Snakes Austral. (1869) 98, pl. 12, fig. 19, Strauch, Schl. Russ. Rept. (1873) 199, Fayrer, Thanatoph. Ind. (1874) pl. 17, Peters, Preuss. Exped. O. Asien 1 (1876) 382, Peters and Doria, Ann. Mus.

Genova 12 (1878) 416, MURRAY, Zool Sind (1885) 397, FISK, Proc Zool Soc London (1885) 482, BOETTGER, Ber Senck Nat Ges (1886) 119, Zool Anz 11 (1888) 398 (Philippines), CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 443

Hydrophis pelamis SCHLEGEL, Phys Serp 2 (1837) 508, Atlas, pl 18, figs 13–15, Fauna Jap, Rept (1838) 90, pl 8

Pelamis ornata GRAY, Zool Misc (1842) 60, Cat Vip Snakes (1849) 43

Hydrophis bicolor FISCHER, Abh Naturw Hamburg 3 (1856) 51, JAN, Icon Ophid (1872) livr 40, pls 2 and 3

Pelamis platurus STOLICZKA, Proc As Soc Bengal (1872) 92, GARMAN, Bull Essex Inst 24 (1892) 88

Hydrus platurus BOULENGER, Fauna Brit India, Rept (1890) 397, Cat Snakes Brit Mus 3 (1896) 267, STEJNEGER, Bull U S Nat Mus 58 (1907) 439, BOETTGER, Ber Offenb Ver Nat (1892) 88

Pelamydrus platurus STEJNEGER, Proc U S Nat Mus 38 (1911) 111

Description of species.—(From an unnumbered specimen in the Santo Tomás Museum, Manila, Manila Bay.) Head elongate, slender, rostral as high as wide visible above, nostril superior, pierced in nasal in lower posterior corner, nasals longer than prefrontals, their mutual suture longer than that between prefrontals; no internasals, frontal about as long as distance to end of snout, narrow and pointed posteriorly, little

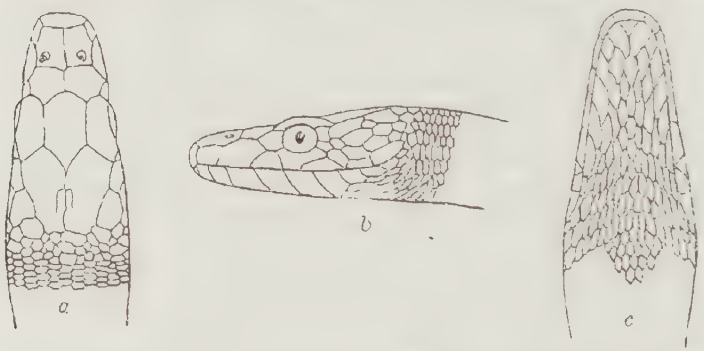

FIG 28 *Pelamydrus platurus* (Linnæus) after Stejneger *a*, head, dorsal view, *b*, head, lateral view *c*, head ventral view

wider than supraoculars, parietals but little longer than frontal, with 2 small equal scales inserted between them and entirely surrounded by them, 8 upper labials, first square, second high, in contact with prefrontal and upper preocular, fourth entering eye; 2 preoculars; 2 large postoculars, temporals 3 + 3; mental very small, 11 and 12 lower labials, first large, broadly in contact, first pair of chin shields small, broken, touching 3 labials,

53 scale rows around body; scales hexagonal or quadragonal, juxtaposed; ventrals scarcely differentiated; 4 preanals, tail greatly flattened.

Color in alcohol.—The 23 dorsal scale rows on body and head are dark brown, the 30 lateral and ventral rows, yellowish, tail barred above with 6 bands of brown, which reach down about halfway on side of tail, below with 7 similar bands alternating, rest of tail yellowish

Measurements of Pelamydrus platurus (Linnæus)

	mm
Total length	540
Snout to vent	479
Tail	61
Greatest width of tail	15

Variation.—This species is extremely variable in color Boulenger[1] recognizes seven color varieties, this specimen belongs to his variety E (*Hydrus bicolor* Schneider) The scales vary from 45 to 53 around the body; they are smooth in the young and in the females, in the males the laterals and ventrals are rough, with 1, 2, or 3 tubercles

Remarks.—This species is rare in the Philippines, the specimen described is one of the first records for Luzon

ELAPINÆ

Tail cylindrical, hypapophyses more or less developed throughout the vertebral column. Poison fangs well developed, standing erect and stationary Deadly poisonous

This group contains the most dangerous snakes, notably the genus *Naja* the species of which are generally known as cobra or *cobra di capello*. There are more than thirty genera of the Elapinæ Most of the genera are confined to Australia and New Guinea, with their near-by islands They constitute the greater part of the Australian snakes One genus is confined to North, Central, and South America, and is the only genus of the family in that territory

Three genera are known in the Philippines

Key to the Philippine genera of the Elapinæ

a^1 Vertebræ of neck with long ribs which enable the distension of neck; poison gland confined to head, scales in 15 to 25 rows around body, internasal borders nostril Naja Laurenti (p. 255)

a^2 No elongate ribs on cervical vertebræ, internasals not bordering nostril

b^1 Scales in 15 rows, poison gland confined to head Hemibungarus Peters (p 268)

[1] Catalogue, loc cit

b' Scales in 13 rows, poison gland very elongate, entering far into body cavity Dolıophis Girard (p 273)

Genus NAJA Laurenti

Naja LAURENTI, Syn Rept (1768) 90, MERREM, Tent Syst Amph (1820) 147, DUMÉRIL and BIBRON, Erp Gen 7 (1854) 1275, GUNTHER, Cat Col Snakes (1858) 220, Rept Brit India (1864) 338, JAN, Elenco Syst. Ofid (1863) 119, BOETTGER, Ber Senck Nat Ges (1886) 116, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 439, STEJNEGER, Bull U S Nat Mus 58 (1907) 394

Naja, part, SCHLEGEL, Phys Serp 2 (1837) 461, BOIE Isis (1827) 537

Dendraspis FITZINGER, Syst Rept (1843) 28

Uræus WAGLER, Syst Amph (1830) 173

Aspis WAGLER, Syst Amph (1830) 173 (non Laurenti)

Tomyris EICHWALD, Zool Spec 3 (1831) 171

Hamadryas (non Hubner) CANTOR, Asiat Res 19 (1836) 87, GUNTHER, Cat Col Snakes (1858) 218

Trimeresurus, part, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 1244

Pseudohaje GUNTHER, Cat Col Snakes (1858) 222

Ophiophagus GUNTHER, Rept Brit India (1864) 340; BOETTGER, Ber Senck Nat Ges (1886) 116, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 439

Naia BOULENGER, Fauna Brit India, Rept (1890) 390, Cat Snakes Brit Mus 3 (1896) 372

"Maxillary extending beyond the palatine, with a pair of large grooved poison-fangs, and one to three small, faintly grooved teeth near its posterior extremity; mandibular teeth, anterior longest Head not or but slightly distinct from neck; eye moderate or rather large, with round pupil, nostril between two nasals and the internasal; no loreal Body cylindrical, scales smooth, without pits, disposed obliquely, in 15–25 rows (or more on the neck); ventrals rounded Tail moderate; subcaudals all or greater part in two rows." (*Boulenger*)

The genus *Naja* is distributed from Africa, over southern Asia and the Malay Archipelago One species extends into Celebes The larger part of the species is African Two well-known and widely distributed species enter the Philippines.

Key to the Philippine species of Naja Laurenti

a' Scales in 19 to 21 rows on neck, 15 rows on body, 4 meters in length N hannah (Cantor) (p 256).

a². Scales in 21 to 35 rows on neck, 17 to 25 rows on body, 2 meters in length or less N naja Linnæus (p 259).

The second species is represented in the Philippines by three well-defined subspecies which as Boulenger * states, "might be regarded as distinct species but for the absence of any sharp demarcation-lines between them"

* Catalogue, 381

The cobra, or *cobra di capello* (Portuguese), which is the common name for this group of snakes associated under the species *Naja naja*, is readily recognized by its habit of raising the anterior part of the body from the ground, and spreading the skin of the neck, when disturbed. The vertebræ of the neck are equipped with elongate ribs Usually, too, the snake emits a loud hissing noise when it strikes, and not infrequently squirts small jets of venom from its hollow fangs This poison can be thrown at least 2 meters, but cannot do harm unless thrown into a fresh wound or into the eye The eye thus poisoned becomes inflamed and a conjunctivitis results, sometimes causing blindness and even death In *Naja hannah* the ability to spread the neck is probably much less developed than in *N naja*. The food of the two species consists of snakes, lizards, and frogs. *N. hannah* appears to prey wholly on snakes of other species Snakes of this genus are deadly poisonous to man, death usually ensuing a few hours after the individual is bitten

NAJA HANNAH (Cantor)

PLATE 31, FIGS 2 AND 3

Hamadryas hannah CANTOR, As Res 19 (1836) 87 pls 10–12
Naja bungarus SCHLEGEL, Phys Serp 2 (1837) 476, pl 17, figs 8, 9, SCHLEGEL and MULLER, in Temminck Verh Overz Bez Nederl Ind Rept (1844) 71, pl 10, PETERS, Mon Berl. Ak (1861) 690, BOULENGER, Fauna Brit India, Rept (1890) 392 fig 114 GRIFFIN, Philip Journ Sci § D 6 (1911) 266
Hamadryas ophiophagus CANTOR, Proc Zool Soc (1839) 32, Cat. Mal Rept (1847) 116
Trimeresurus ophiophagus, part, DUMÉRIL and BIBRON, Erp Gen 7 (1854) 1245
Hamadryas elaps GUNTHER, Cat Col Snakes (1858) 219
Trimeresurus bungarus JAN, Rev and Mag Zool (1859) 129, Icon Gén (1873) 44, pl 4
Naja (Hamadryas ?) fasciata PETERS, Mon Berl Ak (1861) 689
Ophiophagus elaps GUNTHER, Rept Brit India (1864) 341; STOLICZKA, Journ As. Soc Bengal 39 (1870) 210, pl 11, fig 7; ANDERSON, Proc. Zool Soc (1871) 188, FAYRER, Thanatoph Ind (1874) pls 7, 8, BOETTGER, Ber Senck Nat Ges (1886) 116, Ber. Offenb Ver Nat (1888) 86, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 440
Naja elaps THEOBALD, Cat Rept Brit India (1876) 209
Naja ingens VAN HASSELT, Verst Ak Amsterd 17 (1882) 140
Ophiophagus fasciatus BOETTGER, Ber Senck Nat Ges (1886) 117; CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 439
Hamadryas elaps FISCHER Jahrb wiss Anst Hamburg 2 (1885) 81
Naja tripudians var *sumatrana* MULLER, Verh Nat Ges Basel 8 (1887) 277
Naja bungarus BOULENGER Cat Snakes Brit Mus 3 (1896) 386

Description of species.—(From No. 13, Bureau of Science collection, collected at Iwahig, Palawan, 1917, by C M Weber.) (Adult male) Rostral barely visible from above, one and one-fifth times as wide as high; suture between internasals about half the length of scales; prefrontals larger than internasals, wider than long, drawn to a point laterally which nearly separates preocular from nasal; frontal about one-fifth longer than wide, as wide as but slightly narrower than supraoculars, equal to its distance from rostral, parietals very long, equal to their distance from rostral, bordered by 2 large temporals and 2 large postparietals, nostril between 2 nasals and internasal; a small square preocular, 3 postoculars; temporals 2 + 3; 7 upper labials, fifth nearly as high as fourth, 8 lower labials, anterior chin shields wider but shorter than posterior, which are not separated from each other; scales in 15 smooth rows about body, 21 rows about neck; ventrals 267, subcaudals 104 (8 undivided); anal single, length of eye contained in distance from eye to snout one and seven-tenths times

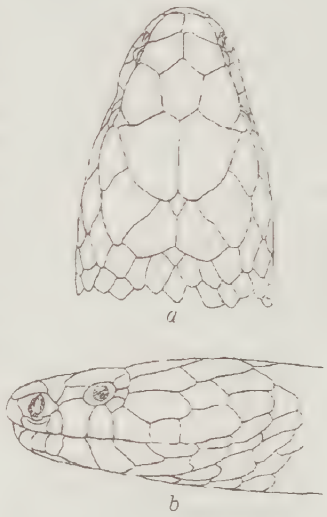

FIG 29 *Naja hannah* (Cantor) after Boulenger *a* head dorsal view *b* head, lateral view

Color in alcohol.—Yellowish to olive brown above, the scales of posterior part of body edged with brown, growing darker and more pronounced on tail. Body traversed by a number of dim lighter bars, at least seventy, scarcely apparent on anterior part of body or tail; this coloration is due chiefly to the coloring of the skin between scales

Measurements of Naja hannah (Cantor)

	mm
Total length	2,315
Snout to vent	1,853
Tail	462
Length of head	45
Width of head	22

Variation.—Three islands are represented in the collection, and the following differences in scale formulæ are noted. These formulæ are compiled as averages from the table. Palawan, four specimens, $\frac{19\ 21}{15}$, 262, 103. Mindoro, two specimens, $\frac{17\ 19}{15}$ 218 5, 108. Luzon (Baguio), two specimens, $\frac{19}{15}$, 250 5; 92 5. The Palawan forms have a larger number of ventral scales than do those from the other two islands. I doubt whether these averages would be maintained with large series. The total averages of ventrals and of subcaudals of the eight specimens are 256 and 101, respectively. Of the specimens listed by Boulenger the averages are. Ventrals, 249; subcaudals, 101. Thus it appears that the Philippine specimens have a slightly higher average of scales. Boulenger lists four color varieties, but these may be largely due to the various ages of the specimens. The young are always more vividly marked than the adults. Peter's *Ophiophagus fasciatus* is probably founded on a young specimen. The number of undivided subcaudals varies; the specimens have a range of from 7 to 41, the one with the highest count being a

TABLE 54.—*Measurements and scale counts of Naja hannah (Cantor)*

No.	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Labials: Upper	Labials: Lower	Scale rows: Neck	Scale rows: Body	Undivided subcaudals	Postoculars	Collection
				mm.	*mm.*									
727	Mindoro	C. Burks	♂	1 610	345	251	112	7	8	19	15	41	3-4	E. H. Taylor
12	Palawan	M. Ramos	♀	2, 378	475	266	104	7	8	19	15	[illegible]	3	Bureau of Science
13	do	C. M. Weber	♂	2 315	462	267	104	7	8	21	15	8	3	Do.
14	Baguio	[illegible]	♂	2 270	475	249	90	a7-5	8	19	15	10	3	Do.
15	Palawan	C. H. Lamb	♂	1 955	486	251	102	7	8	19	15	11	3	Do.
16	do	do	♀	2 725	530	264	101	7	8	19	15	8	3	Do.
17	Mindoro	Marine Biological Expedition.	♂	2 142	530	246	104	7	8	17	15	11	3	Do.
18	Baguio	L. E. Griffin	♂	2 620	540	252	95	7	8	19	15	33	3	Do.

[a] Abnormal

medium-sized specimen from Mindoro; this same specimen has 4 postoculars on the right side

The variation in color and markings is small, save that the narrow transverse bars are very dim or wanting in older specimens, and the color edging the scales on the tail is quite black.

Remarks.—This snake grows to a large size in the Islands A specimen collected in Balabac by Mr C M Weber measured 4.25 meters, which I believe is the largest recorded specimen. Unfortunately its large bulk caused it to rot in the preserving fluid It is reported as being very common on Lubang Island, north of Mindoro. I have not been able to verify this report It probably occurs on all the larger islands It is striking, however, that I find no specimens recorded from the western Visayan islands (Bohol, Cebu, Negros, and Panay) In fact, no cobras of any sort have yet been recorded from those islands.

NAJA NAJA Linnæus

The assemblage of subspecies now associated under this specific name is so large that I have not attempted to give a synonymic list of them Synonymies for Philippine forms are given in the treatment of the individual subspecies

Key to the Philippine subspecies of Naja naja Linnæus

a^1 Scale rows on neck, 19 to 21, on body 17 to 19, ventrals, 165 to 178, subcaudals, 42 to 46 Black above with yellow reticulations or yellow dots, a few yellow anterior ventrals, behind which ventrals are dense black . N n. samarensis Peters (p 259)

a^2 Scale rows on neck, 21 to 23, on body, 19, ventrals, 178 to 186, subcaudals, 46 to 51 Black above and below with a yellowish V-shaped mark, young dense black with few whitish bars N n miolepis (Boulenger) (p 262)

a^3 Scale rows on neck, 25, on body, 21 to 23, ventrals, 187 to 196, subcaudals, 39 to 47, uniform olive or olive brown, young, yellowish olive with darker reticulations N n philippinensis subsp nov (p 265)

NAJA NAJA SAMARENSIS Peters

Naja tripudians var *F*, part, GUNTHER, Cat Col Snakes (1858) 225

Naja tripudians var *samarensis* PETERS, Mon Berl Ak (1861) 690, BOETTGER, Ber Senck Nat Ges (1886) 116

Naja tripudians GUNTHER, Proc Zool Soc London (1879) 78, FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 81

Naja samarensis BOULENGER, Cat Snakes Brit Mus 3 (1896) 385

Naja samarensis GRIFFIN, Philip Journ Sci § D 6 (1911) 266

Description of species.—(From No 427, E. H Taylor collection; collected at Bunawan, Agusan, Mindanao, June 25, 1913, by E H Taylor.) Rostral one and two-fifths to one and three-

fifths times as wide as high, the portion visible from above about one-fourth distance from frontal, sharply pointed behind, the sutures with nasals and labials subequal, the suture between internasals much shorter than the length of the scales; prefrontals a little broader than long, as long as or a little longer than internasals, the suture between them equal to the length of the scales, frontal one-sixth longer than wide, wider than supraocular but not quite so long, its length equal to its distance from rostral, parietals large, longer than wide, followed by a series of somewhat enlarged occipital shields bordering parietals and temporals; 2 nasals, posterior highest, appearing very narrow in a lateral view, from an anterior view it appears larger than anterior, 1 preocular reaching down to near middle of eye; 3 postoculars, third well below eye; temporals 2 + 2; 7 upper labials, third highest, reaching height of middle of eye, third and fourth entering orbit, first 2 smallest, 8 lower labials, fourth and fifth largest, 4 touching first pair of chin shields; anterior chin shields much larger than posterior, which are separated from each other; ventrals, 165; anal single, subcaudals, 46, scales smooth in 19 rows around neck, 17 rows around body, eye moderately large, about half as long as snout

Color in life.—Above a dark, slightly iridescent, brownish black, with an indistinct yellowish netting, more prominent on posterior part of body; only a part of skin between scales yellowish, top of head olive-brown, sides of head and neck lighter, with a dim lighter line extending some distance along sides; lower part of upper labials, lower labials chin, and first ten ventrals yellowish, eleventh to sixty-sixth ventrals black at first, but growing lighter toward end, ventrals behind these are yellowish, mottled with darker blotches, a median darker line below tail

Measurements of Naja naja samarensis Peters

	mm
Total length	870
Snout to vent	725
Tail	145
Length of head	35
Width of head	21

Variation.—The six specimens in my collection from Mindanao, do not vary greatly among themselves in scalation. The amount and intensity of the dark coloring on the belly varies somewhat. All the specimens have the first few ventrals (usually nine) yellowish, although the color may cover only the first seven, after these the ventrals are an intense black, which color may continue back a third or more the length of body, growing gradually less

intense and lighter. In the young the black may cover as few as fifteen ventrals, also in the young the lighter line beginning on the hood appears more prominent. In all the specimens there is a small, lower labial inserted between the upper part of third and fourth lower labials bordering mouth, in the specimen described it is absent on one side One specimen in the Bureau of Science, collected in Samar, has much more yellow on body, it is distributed in roundish spots on all the scales, the color rarely covering the entire scale, but frequently spots on two or three scales are confluent, the lateral light line is distinct in this adult specimen, and it has nineteen rows of scales around the body. The variation * in counts of scale rows on neck and body, and of ventrals and subcaudals, may be represented by the following formula $\frac{19-23}{17-19}$, 165 to 178, 42 to 50. Two specimens have two undivided subcaudals; there is some variation in the relative width and height of the rostral

TABLE 55.—*Measurements and scale counts of Naja naja samarensis Peters*

No	Locality	Collector	Sex or age	Length
				mm
23	Bunawan Agusan	L H Taylor	♀	278
24	do	do	♀	(a)
25	do	do	♀	810
26	do	do	♂	870
27	do	do	♂	900
28	do	do	♂	339
R 20	Catbalogan Samar	G I Cullen	♀	1009

No	Tail	Ventrals	Subcaudals	Upper labials	Lower labials	Scale rows: Body	Scale rows: Neck	Collection
	mm							
23	45	172	44	7	8	17	19	L H Taylor
24	136	172	46	7	8	17	21	Do
25	120	178	42	7	8	17	21	Do
26	115	165	46	7	8	17	19	Do
27	145	172	45	7	8	17	19	Do
28	55	173	44	7	8	17	19	Do
R 20	156	175	43	7	8-9	19	21	Bureau of Science

[a] Mutilated

I do not believe that the differences here recorded warrant giving this form specific designation while the other two forms,

* Combining the data recorded in the table with those in Boulenger's Catalogue, op cit 385

Naja naja miolepis and *Naja naja philippinensis*, are regarded only as varieties, as Boulenger has treated them It is certain that all three should be regarded as distinct species if only Philippine material were to be considered, as two of the forms, *miolepis* and *samarensis*, appear to be isolated here, geographically, while the third invades the restricted territories of the other two There appears to be no intergrading of any sort

Remarks.—This cobra is probably confined to the eastern Visayan islands (Samar and Leyte) and Mindanao It is common in the Agusan Valley The specimens in my collections were found crawling in daytime in the forest or on the lawn about my house When discovered they made no effort to escape, but usually stopped quiet, if disturbed they immediately raised their heads and spread their hoods I did not observe them eject poison from their fangs, as is true of *Naja naja philippinensis*

A specimen from Zamboanga kept alive in the Bureau of Science has a very intrepid disposition and is disposed to put itself on the defensive at the approach of anything It readily takes living frogs and snakes (*Calamaria gervaisii*) for food. Snakes, lizards, and frogs probably form its food under natural conditions. The snake is deadly poisonous Two large Berkshire pigs kept on an agricultural farm at Bunawan succumbed to bites of these snakes within a period of a few hours after being bitten Among the Manobos the snake is called *aguason* and is greatly feared Several harmless snakes are also classed as *aguason* because of similarity in color

NAJA NAJA MIOLEPIS (Boulenger)

PLATE 32

Naia tripudians BOULENGER Ann & Mag Nat Hist VI 14 (1894) 84
Naia tripudians var *miolepis* BOULENGER, Cat Snakes Brit Mus 3 (1896) 384
Naja naja miolepis GRIFFIN, Philip Journ Sci § A 4 (1909) 600, § D 6 (1911) 266, BARBOUR, Mem Mus Comp Zool Harvard Coll 44 (1912) 136

Description of species.—(From No 3, Bureau of Science collection, collected at Iwahig Palawan 1908, by C M Weber) Rostral one and one-fifth times as wide as high, visible above, the part visible triangular, internasals about as large as prefrontals, their greatest length along prefrontal suture, their mutual suture less than half their length, narrowly in contact with preocular: prefrontals wider than long, shorter than internasals, frontal one and one-fifth times as long as broad, and one and a half times as wide as supraoculars, but equal in length,

slightly shorter than its distance to end of snout; parietals much longer than wide; nostril vertical, between 2 nasals; a single small preocular; 3 postoculars (2 on left side); 2 anterior temporals, the lower nearly as large as parietals, narrowly separated from mouth; 3 posterior temporals; the scales bordering parietals and temporals slightly enlarged; 7 upper labials, third and fourth entering eye, third not reaching the height of middle of eye;

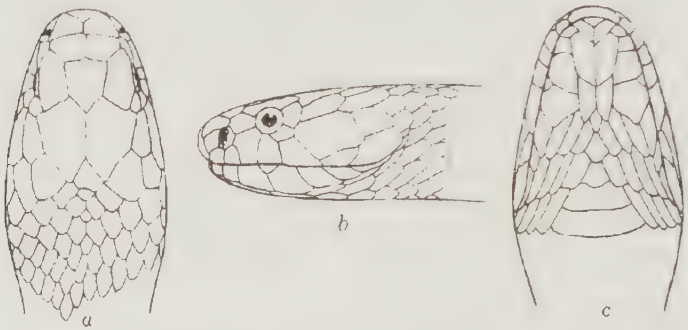

FIG. 36. *Naja naja miolepis* (Boulenger); *a*, head, dorsal view; *b*, head, lateral view; *c*, chin; × 1.

labials in the following order of size: seventh, fifth, third, fourth, sixth, first, and second; 8 lower labials, with a small scale inserted between fourth and fifth bordering mouth (always present); anterior chin shields longer and wider than posterior, which are not separated; 4 labials touching first pair of chin shields; scales smooth in 23 rows on neck, 19 around body; ventrals, 182; subcaudals, 46; anal single.

Color in alcohol.—Bluish to brownish black on body dorsally, and laterally slightly lighter below; the skin between the scales lighter; on latter half of body several dim, V-shaped, lighter bands cross body at distant intervals; head olive-brown, side of head and chin yellowish. A yellowish brown band on side of neck crossing anterior part.

Measurements of Naja naja miolepis (Boulenger).

	mm.
Total length	1,227
Snout to vent	1,050
Tail	177
Length of head	36
Width of head	23

Variation.—The young are deep black with a series of about 12 yellowish bands about body continuing to tip of tail; these

are darker on belly, but are usually distinct; the anterior ones are V-shaped on back; first 12 ventrals yellow; head yellow-brown, with a dark area on frontal and parietals. Four of the six specimens studied have only 2 preoculars on the left side and 3 on the right, one specimen has this reversed, and the other has the same number on each side. The average counts of scale rows on neck and body, of ventral and subcaudal scales, may be expressed in the following formula: $\frac{21-23}{19}$, 178 to 186; 46 to 51. This, combined with the recorded counts of Boulenger,* gives $\frac{21-23}{17-19}$; 178 to 199; 45 to 51. The Borneo specimens have 17 scale rows on body, while the Palawan forms have 19. There is a slightly higher average of ventrals in the Borneo forms.

TABLE 56.—*Measurements and scale counts of Naja naja miolepis (Boulenger)*

No.	Locality	Collector	Sex or age	Length	Tail	Ventrals
				mm	mm	
1	Palawan	C. M. Weber	♂	1,180	181	180
2	do	do	♀	1,075	160	194
3	do	do	♂	1,227	177	182
4	do	do	juv.	750	116	186
5	do	do	juv.	[illegible]	60	178
6	do	do	juv.	315	55	186

No.	Subcaudals	Labials		Scale rows		Postoculars	Collection
		Upper	Lower	Neck	Body		
1	51	7	9	23	19	2-3	Bureau of Science
2	48	7-8	9	21	19	2-3	Do.
3	46	7	9	23	19	2-3	Do.
4	47	7-8	8-9	23	19	3-3	Do.
5	50	7	9	23	19	3	Do.
6	49	7	9	23	19	2-3	Do.

Remarks.—This subspecies appears to be confined to Borneo and Palawan, and probably the other islands of the Palawan group. It is easily distinguishable from the other Philippine forms by the white markings on the young, and the dark uniform color of the adults. Griffin † states that the species is common in Palawan.

* Op. cit., 384–385. † Philip. Journ. Sci., § A, 4 (1909), 600.

NAJA NAJA PHILIPPINENSIS subsp nov.

Naia tripudians cæca, part, BOULENGER, Cat Snakes Brit Mus 3 (1896) 383 (spec *o*, highlands of Lepanto, N Luzon)

Naja naja cæca GRIFFIN, Philip Journ Sci § A 4 (1909) 600, § D 6 (1911) 266

Description of species.—(From No 7, Bureau of Science collection; collected in Manila, by C Canonizado) (Adult female) Rostral one and three-fifths times as long as broad, the portion visible above less than one-fourth its distance from frontal; internasals about same size as prefrontals, in contact with preocular, the suture between them about half the length of the scales, prefrontals as wide as long, their shortest sides bordering frontal; latter one and one-fifth times as long as wide, its length equal to its distance from rostral, a little wider, but shorter, than supraocular; parietals longer than wide; nostril between 2 nasals and internasal; a preocular present; 3 postoculars, temporals 2 + 2; 7 upper labials, third and fourth entering eye, third highest, not reaching level of middle of eye, 8 lower labials (counting a small scale inserted between fourth and fifth labials); anterior chin shields largest, touching 4 lower labials, posterior chin shields separated from each other, ventrals, 190, subcaudals, 43, anal single; scales smooth, in 21 rows about body; 25 rows around neck; eye more than half the length of snout.

Color in life.—Above yellowish to olive-brown, becoming slightly lighter on outer scale rows, below immaculate yellowish white to cream; no markings of any sort evident.

Measurements of Naja naja philippinensis subsp nov

	mm
Total length	1,000
Snout to vent	860
Tail	140

Variation.—The young of this subspecies are dark brown to black, reticulated with a heavy network of light olive-yellow in distinct contrast, the head has a suggestion of darker markings, the neck is lighter, with irregular series of small round or longitudinal spots on each side; below, the belly is of a dirty light olive The scales behind parietals are usually more or less enlarged

The variation of the scale counts is expressed in the following formula: neck and body rows, $\frac{23-25}{21-23}$; ventrals, 177 to 191, subcaudals, 39 to 49 The average count is as follows $\frac{25}{21}$, 176, 44 Specimens Nos. 463 to 470 recorded in the table were hatched from eggs laid in the laboratory by specimen No 481. The varia-

tions which obtain in this brood are striking, they are expressed by the following formula: $\frac{23-25}{21}$, 177 to 191, 41 to 48; or an average ventral and subcaudal count of 184 and 44, respectively. The scale formula of the mother is $\frac{23}{21}$ 191, 39. Three of the young have the posterior chin shields in contact

Remarks.—The common Luzon cobra cannot be classed with either *Naja naja cæca*, as Griffin and Boulenger have done, or *N. naja sputatrix*, on the basis of either color or scale formula

The average scale counts given by Boulenger for *N. naja cæca* (exclusive of the two Javanese specimens and a specimen from Luzon) are: $\frac{27}{23}$, 193, 66, *N. naja sputatrix* $\frac{25}{20}$, 176, 47. *Naja naja philippinensis* approaches *N. naja cæca* in color, but varies markedly in the scale formula, it approaches *N. naja sputatrix* in the scale formula, but varies markedly in color and markings Several of these snakes are kept at the Bureau of Science for the purpose of extracting the venom from them for use in the manufacture of antivenom serums

In captivity some specimens take frogs and small snakes readily for food, others refuse all food, starving themselves to death. One female laid twelve eggs in the vivarium These were removed and buried in moist earth After a period of incubation of seven weeks the young emerged The young snake on breaking the egg, stuck out its head and by various movements made a burrow to the surface without emerging wholly from the egg Thus with the body still in the egg and the head at the surface of the ground, it would remain for hours at a time unless disturbed, at which times it would withdraw wholly within the egg which still contained much liquor On removing an egg and its living contents from under the ground and placing it on the surface, the young cobra would partially emerge and, with body erect for a length of several centimeters and hood distended, would hiss and strike at any object held near it The young snakes did not leave the eggs voluntarily until after three or four days When this was done they immediately took refuge in a small jar of water placed in the cage, their bodies wrapped together in the water in a mass and their snouts above the surface Here they were to be found for a period of from eight to ten days, when they left the water and took refuge under small objects where they began the process of shedding They touched no food during these early days of their life but did so as soon as the shedding was completed

TABLE 57.—*Measurements and scale counts of Naja naja philippinensis subsp. nov.*

No.	Locality	Collector	Age or sex	Length	Tail
				mm.	mm.
481	Pampanga, Luzon	Guerrero	♀	1,115	132
483	Hatched in laboratory		yg.	345	47
484	do		yg.	345	50
465	do		yg.	364	56
466	do		yg.	325	42
467	do		yg.	351	48
468	do		yg.	311	40
469	do		yg.	320	41
470	do		yg.	340	45
482	Pampanga, Luzon	Guerrero	♂	1,120	143
483	do	do		850	110
484	do	do	♂	1,145	150
	do	do	♂	1,290	170
	do	do	♂	1,455	195
7	Manila	C. Canonizado	♀	1,000	140
8	Pampanga, Luzon	L. I. Williams	yg.	345	50
9	Palawan	C. M. Weber	♀	840	118
10	Manila	W. Schultze	♀	990	125
				1,200	160
	Los Baños, Laguna	College of Agriculture			
	do	do			

No.	Ventrals	Subcaudals	Labials: Upper	Labials: Lower	2d chin shields separated	Scale rows: Neck	Scale rows: Body	Collection
481	191	39	7	9	Yes	23	21	Bureau of Science
483	180	43	7	8	No	23	21	Do.
484	177	45	7	9	No	25	21	Do.
465	183	44	7	9	No	23	21	Do.
466	190	43	7	8	Yes	23	21	Do.
467	190	45	7	9	Yes	25	21	Do.
468	181	45	7	9	Yes	25	21	Do.
469	191	41	7	9	Yes	23	21	Do.
470	183	44	7	9	No	23	21	Do.
482	183	40	7	9	Yes	25	21	Do.
483	188	41	7	9	Yes	25	21	Do.
484	189	41	7	9	Yes	23	21	Do.
	183	43	7	9	Yes	25	21	Do.
	191	46	7	9	Yes	25	21	Do.
7	190	43	7	8	Yes	25	21	Do.
8	190	47	7	9	Yes	25	23	Do.
9	190	47	7	9	Yes	25	21	Do.
10	188	39	7	9	Yes	25	21	Do.
	188	47	7	9	Yes	25	21	Do.
	184	49	7	9	Yes	25	21	Do.
	187	40	7	9	Yes	25	21	College of Agriculture
	186	40	7	9	Yes	25	21	Do.

They were fed tadpoles or young frogs, which they would seize and hold some time, and then begin the process of swallowing They frequently bit each other, and on two ocasions one was found engaged in swallowing one of its brothers, one was withdrawn that had been half swallowed, and it recovered The young lived for about two months when an epidemic appeared among them and all died

A young specimen, five days old, bit a guinea pig, which succumbed in twenty-two minutes These snakes are poisonous, and probably cause more deaths than any other snake in the Philippines

The subspecies is found very commonly in Luzon, and it occurs in Palawan and probably in other large islands

Genus HEMIBUNGARUS Peters

Elaps, part, Duméril and Bibron, Erp Gén 7 (1854) 1191, Gunther, Cat Col Snakes (1858) 229, Jan, Rev and Mag Zool (1858) 516

Brachyrhinchus Fitzinger, Syst Rept (1843) 28

Callophis, part, Gunther, Proc Zool Soc London (1859) 81

Hemibungarus Peters, Mon Berl Ak (1862) 637, Boettger, Ber Senck Nat Ges (1880) 117, Boulenger, Cat Snakes Brit Mus 3 (1896) 392, Casto de Elera, Cat Fauna Filipinas 1 (1895) 440, Stejneger, Bull U S Nat Mus 58 (1907) 387.

"Maxillary bone extending forwards beyond the palatine, with a pair of large grooved poison-fangs and one to three small solid teeth, mandibular teeth subequal Præfrontal bones in contact with each other on the median line Head small, not distinct from neck; eye small, with round pupil, nostril between two nasals, no loreal. Body cylindrical, much elongate, scales smooth, without pits, in 13 or 15 rows, ventrals rounded. Tail short, subcaudals in two rows" (*Boulenger.*)

Key to the Philippine species of Hemibungarus Peters

a^1 Temporals 2 + 3, 6 upper labials
  b^1 Second labial not touching preocular
    H calligaster (Wiegmann) (p 269)
  b Second labial touching preocular H meclungi sp nov (p 272)
a^2 No temporals, 7 upper labials, sixth forming a suture with parietal
    H collaris (Schlegel) (p 269)

The genus *Hemibungarus* is a small, compact one, with few species The three species given in the key are confined to the Philippines Another species, *H nigriscens*, is found in India, and two others, *H japonicus* and *H. boettgeri*, are found on nearby archipelagoes to the north The snakes are poisonous They

appear to be rather rare in the Philippines The name *oro-odto* (Bohol-Visayan) is applied to this snake It is probable that the names *camamalo* and *palapal* are also referable to this species

HEMIBUNGARUS COLLARIS (Schlegel)

Elaps collaris SCHLEGEL, Phys Serp 2 (1837) 148; Abbild (1844) 137, pl 46, figs 10–11, JAN, Elenco Syst Ofid (1863) 114, Icon Gén (1873) 43, pl 1, fig 1
Elaps gastrodelus DUMÉRIL and BIBRON, Erp Gén 2 (1854) 1212
Hemibungarus collaris BOETTGER, Ber Senck Nat Ges. (1886) 117, BOULENGER, Cat Snakes Brit Mus 3 (1896) 393, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 440, GRIFFIN, Philip Journ Sci § D 6 (1911) 266

Description of species.—(From Boulenger) "Rostral broader than deep, just visible from above, internasals shorter than the præfrontals; frontal once and a half as long as broad, as long as its distance from the rostral, as long as the parietals, one præ- and two postoculars; seven upper labials, third and fourth entering the eye, sixth largest and forming a suture with the parietal, anterior chin-shields in contact with the symphysial and with four lower labials, posterior chin-shields as long as the anterior Scales in 15 rows. Ventrals 228–230, anal divided; subcaudals 12–22 Blackish above, barred black and red below; a yellowish occipital collar"

Measurements of Hemibungarus collaris (Schlegel)

	mm
Total length	430
Snout to vent	415
Tail	15

Remarks.—I have seen no specimen of this snake Obviously it is very rare, and none appears to have been taken in recent years The only definite locality known is Manila, recorded by Jan Only a few specimens are known The species is deadly poisonous.

HEMIBUNGARUS CALLIGASTER (Wiegmann)

PLATE 33, FIGS 1 AND 2, PLATE 34, FIGS 1 AND 2

Elaps calligaster WIEGMANN, Nova Acta Acad Leop-Carol I 17 (1835 258, pl 20, fig 2; DUMÉRIL and BIBRON, Erp Gén 7 (1854) 1226, GUNTHER, Cat Col Snakes (1858) 231, JAN Icon Gén (1873) 43, pl 2, fig 2, Rev & Mag Zool (1859) 510, PEIERS, Mon Berl Ak (1861) 689
Callophis calligaster GUNTHER, Proc Zool Soc London (1859) 88.
Hemibungarus calligaster MEYER, Mon Berl Ak (1869) 213, MULLER, III Nacht Cat. Help. Samml Basel Mus (1883) 18; FISCHER,

Jahrb wiss Anst Hamburg 2 (1885) 81, BOETTGER, Bei Senck Nat Ges (1886) 117, BOULENGER, Cat Snakes Brit Mus 3 (1896) 393, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 440, GRIFFIN, Philip Journ Sci § D 6 (1911) 266

Hemibungarus gemianulis PETERS, Mon Berl Ak (1872) 587

Callophis gemianulis MULLER, Verh Nat Ges Basel 7 (1883) 289

Hemibungarus gemmianulis BOETTGER, Bei Senck Nat Ges (1886) 117, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 441

Description of species.—(From No 231, E H Taylor collection, collected at Iloilo, Panay, 1914, by Archie L Howard) Head not distinct from neck, rostral a little broader than deep, narrowly visible above, forming its broadest suture with nasal; internasals broader than deep, the suture between them about half their width, bordering upper edge of nostril, prefrontals broader than deep, the left forming a short suture with right internasal, forming equal sutures with posterior nasal and upper preocular, frontal nearly twice as long as wide, wider and longer than supraoculars, longer than its distance from end of snout; parietals much longer than frontal, nearly twice as long as wide, touching upper postocular and 3 temporals, 2 nasals, anterior twice as large as posterior, almost surrounding nostril, no loreal*; 2 preoculars, upper much the larger; eye small, not wider than its distance from mouth, 2 postoculars, lower largest, temporals 2 + 2 + 2, upper anterior touching both postoculars; 6 upper labials in the following order of size fifth, sixth, third, fourth, second, first; third and fourth entering eye, 7 lower labials, first 4 in contact with anterior chin shields which are twice as large as posterior pair, body scales in 15 longitudinal rows, smooth, without apical pits, outer rows largest; ventrals, 197; anal very wide, single, subcaudals, 20 pairs, body cylindrical, tail short and thick, ending in a rather sharp-pointed scute.

Measurements of Hemibungarus calligaster (Wiegmann)

	mm
Total length	462
Snout to vent	427
Tail	35
Length of head	12
Width of head	8.5

Color in alcohol.—Above black-blue, traversed by 68 narrow, dotted rows of yellowish white (red in life?); head blue-black, the color extending down on side of head involving eye, the entire fourth and fifth labials, and the edges of their adjoining scales; snout yellowish, chin cream, the color extending to superior tem-

* It is probable that the second nasal is really a loreal element

porals, a black spot on fourth lower labial, tail flesh pink with 2 broad bluish bands, each divided by a very narrow light line, and separated from each other by 7 transverse scale rows, belly barred bluish black and cream (red in life)

Variation.—The Bureau of Science collection contains seven specimens; among these very marked variation in color obtains in specimens of different ages. The scale formulæ are rather uniform, with the exception of the wide range in ventral counts The ventrals vary between 197 and 257; the subcaudals, between 19 and 23.

TABLE 58.—*Measurements and scale counts of Hemibungarus calligaster (Wiegmann)*

No	Locality	Collector	Sex	Length	Tail	Ventrals
				mm	*mm*	
21	Calauan Laguna	R C McGregor	♂	525	30	228
22	Mount Banahao, Laguna	M L Merritt	♀	322	22 5	236
23	Samal, Bataan	A Celestino	♂	340	21	233
25	Montalban Rizal	W Schultze	♂	205	13	250
26			♀	210	13 5	216
27	Montalban, Rizal	W Schultze	♀	493	30	251
28	Los Baños, Laguna	F W Foxworthy	♂	415	23	257
----	---- do		♀	455	27	222
231	Iloilo	A L Howard	♂	462	35	197

No	Subcaudals	Labials: Upper	Labials: Lower	Labials: Enter eye	Labials: Touch chin shields	Preoculars	Postoculars	Collection
21	21	6	7	3,4	4	1	2	Bureau of Science
22	23	6	6	3,4	4	1	2	Do
23	19	6	7	3,4	4	1	2	Do
25	23	6	6-7	3,4	4	1	2	Do
26	20	6	7	3 4	4	1	2	Do
27	20	6	7	3,4	4	2-1	2-1	Do
28	19	6	7	3,4	4	1	2	Do
----	19	6	7	3,4	4	1	2	College of Agriculture
231	20	6	7	3,4	4	2	2	E H Taylor

The specimen here described is the only one that has 2 preoculars, save one specimen that has 2 preoculars on one side

In coloration the young are very different No 25, Bureau of Science collection, is cream, with 29 dark brown bands on body and 2 on tail, slightly narrower on the belly where they cover 2 or 3 ventrals, while on the back they cover 5 transverse scale rows, the head is yellow with a narrow band involving eyes, to mouth

No 22, Bureau of Science collection, is similar to No. 25 but has 23 black-brown bars on body, and 2 on tail; the dorsal part of the light interspaces has a brownish wash and the brown bars are darker on the edges which are bordered with lighter color; ventrally the bars inclose an irregular lighter area Nos 23 and 28, Bureau of Science collection, have 24 and 27 dark bars, respectively, but the light interspaces, except on tail, are a shade lighter brown, bordered by narrow zigzag lighter lines; the lighter area on the ventral bars is wanting in these two specimens No 26 is a very young specimen, which has its 24 black bars entirely divided transversely by a narrow light line.

Remarks.—This species is found in all the eastern Philippines Specimens are known from Luzon (many localities) and southern Mindanao. The type locality is probably Manila.

HEMIBUNGARUS MCCLUNGI sp. nov

PLATE 33, FIG. 3, PLATE 34, FIGS 3 AND 4

Hemibungarus sp GRIFFIN, Philip Journ Sci § D 5 (1910) 214

Type.—No. 24, Bureau of Science collection, collected on Polillo Island, October, 1909, by C Canonizado

Description of type.—This species is allied to *Hemibungarus calligaster*, but differs from it in having a shorter, stouter body, a larger, more elongate head, the second labial in contact with preocular, the black stripe across head absent, and a lower average of ventrals Head distinct from neck; rostral narrowly visible from above, about as broad as deep; internasals broader than deep, their mutual suture slightly more than half that between prefrontals, latter broader than long, their suture with frontal forming a straight transverse line; frontal five-sided, very much wider and longer than supraoculars, the longest sides parallel, parietals narrow, elongate, nostrils pierced in posterior part of anterior nasal, which almost surrounds nostril; this followed by a second nasal (or loreal) element; a single preocular; 2 postoculars; 2 large anterior temporals, 6 upper labials, second in contact with preocular, third and fourth entering eye, 6 lower labials, 3 touching first chin shields, which are only slightly larger than second pair, ventrals, 206, anal single, subcaudals, 21

Color in alcohol.—Above cream white traversed by 22 purplish bands about 6 scales wide; some of these bands are partially divided transversely by a light streak, visible ventrally and somewhat evident on sides; the first band on neck is broadest and reaches forward to parietals; the band is broadly interrupted on underside of neck, and is transversely divided dorsally; 2 bands

belong to tail; below, markings similar to dorsal markings except that the bands are more brown than purple, a black spot is present about eye.

Measurements of Hemibungarus mcclungi sp nov

	mm
Total length	190
Snout to vent	175
Tail	15
Width of head	5 25
Length of head	9 25

Remarks.—This species is closely allied to *Hemibungarus calligaster* (Wiegmann). Table 59 shows the chief variations in size and proportions

TABLE 59.—*Measurements and scale counts of Hemibungarus calligaster (Wiegmann) and H mcclungi sp nov*

No	Species	Length	Tail	Ventrals	Head			Frontals	Parietal length	Between eyes
					Length	Width	Depth			
		mm	mm		mm	mm	mm	mm	mm	mm
25	*H calligaster*	205	13	250	8	4 5	3	1 9	2 8	2 8
23	do	846	20	233	9 5	5 25	3 75	2 5	3 2	3
24	*H mcclungi*	190	15	206	9 25	5 25	4	2 6	3 4	3 5

Griffin failed to classify the specimen, but remarks "said to be the young of *H calligaster* (Wiegmann)" The type is a young specimen, but the description will enable anyone to recognize the adult. This is another species for the more or less distinctive fauna of Polillo

Genus DOLIOPHIS Girard

Elaps, part, SCHNEIDER, Hist Amph 2 (1801) 289, WAGLER, Syst Amph (1830) 193 SCHLEGEL, Phys Serp 2 (1837) 435, DUMÉRIL and BIBRON, Erp Gén 7 (1854) 1191, GUNTHER, Cat Col Snakes (1858) 229, JAN, Rev & Mag Zool (1858) 516

Matuora GRAY, Ill Ind Zool (1834) 2

Doliophis GIRARD, Proc Acad Nat Sci Philadelphia (1857) 152, U S Expl Exp, Herp (1858) 175, BOULENGER, Cat Rept Brit Mus 3 (1896) 399

Helminthoelaps, part, JAN, Rev & Mag Zool. (1858) 518.

Callophis, part GUNTHER, Proc Zool Soc London (1859) 81, PETERS, Mon Berl Ak (1862) 636, GUNTHER, Rept Brit India (1864) 346, MEYER, Mon Berl Ak (1869) 211, Proc Zool Soc London (1870) 368, REINHARDT, Vid Meddel (1869) 117, BOETTGER, Ber Senck Nat Ges (1886) 117, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 441.

Adeniophis PETERS, Mon Berl Ak (1871) 578, MEYER, Sitzb Ak Berl (1886) 614, BOETTGER, Ber Senck Nat Ges (1886) 117,

BOULENGER, Fauna Brit India, Rept (1890) 386, CASTO DE ELERA, Cat Fauna Filipinas 1 1895) 44J

Maxillary extending forward beyond palatine, with a pair of large grooved poison fangs but no other teeth; mandibular teeth subequal; prefrontal bones in contact with each other on median line; head small, not distinct from neck; eye small with round pupil; nostril between 2 nasals, no loreal body subcylindrical, elongate; scales smooth, without pits, in 13 rows; ventrals rounded, tail short, subcaudals in 2 rows, poison glands elongate, extending far into body cavity, gradually thickening, and terminating in a club-shaped end.

*Key to the Philippine species of Doliophis Girard**

a' Eye about half as long as its distance from mouth, frontal as long as, or a little shorter than, its distance from end of snout
D philippinus (Gunther) (p 277)

a' Eye much more than half as long as its distance from mouth frontal as long as its distance from rostral D bilineatus (Peters) (p 271)

The genus is a comparatively small one, comprising only four species It is distributed from Burma and Cochin China through the Malay Peninsula into the East Indian Archipelago as far as Celebes. Two species are found in the Philippines which appear to be confined to the Archipelago *Doliophis bilineatus* appears to be confined to Palawan, the Calamian Islands, Balabac, and Mindanao The other, *D philippinus*, occurs over the eastern part of the Islands, specimens being recorded from Luzon and Mindanao

These species are both small, and are usually brightly colored on the belly with black and yellow or red bars The tail has broad black and red rings The snakes are poisonous, but the extent of the deadliness of the poison is not known. It is probable that it is quite as deadly as that of the other Elapine snakes, but the smaller size, with the consequent reduced size of the fangs, probably makes these snakes harmless to man under ordinary circumstances *Doliophis bilineatus* is a common snake in Palawan, but *D philippinus* appears to be extremely rare everywhere

DOLIOPHIS BILINEATUS (Peters)

PLATE 34, FIGS 5 AND 6, PLATE 35, FIG 3

Calliophis bilineatus PETERS, Sitz Ber Ges Nat Fr Berlin (1881) 109, BOETTGER, Ber Senck Nat Ges (1886) 117

Boulenger, Catalogue, states that the two genera *Doliophis* and *Calliophis* are the same, save that in the former the poison glands extend along the sides of the body for one-third of the length, terminating in club shaped ends in front of the heart Heart shifted very far back

Adeniophis bilineatus Boulenger, Ann & Mag Nat Hist VI 14, (1894) 84, Boettger, Abh Mus Dresden 7 (1894–95) 5.
Doliophis bilineatus Boulenger Cat Snakes Brit Mus 3 (1896) 404, Griffin, Philip Journ Sci § A 4 (1909) 600, § D 6 (1911) 266

Description of species.—(From No 135, E H Taylor collection; collected on Palawan, 1913, by C M Weber.) (Adult male) Head not distinct from neck or body, somewhat flattened, rostral small, barely visible from above, about as high as wide, suture with first labial very short, that with nasal about twice as long as that with internasal, latter small, bordering nostril above, very much wider than deep, pointed laterally above nostril, prefrontals large, two and a half times as long as internasals, about as wide as deep, not touching labials, frontal a little longer than broad, narrowed rapidly behind to a point, much shorter than its distance from end of snout, about equal to its distance from rostral, parietals longer than wide, longer than frontal but of nearly equal width, in contact with only the upper postocular, nostril large, pierced between 2 nasals, with internasal forming part of upper rim, anterior nasal largest, widest where it borders rostral, tapering toward nostril; posterior very much smaller, separating prefrontal from labial, loreal absent, 1 preocular; supraocular longer than wide, its length less than that of frontal but extending farther forward, 2 postoculars, subequal in size, temporals 1 + 2, both very large, anterior touching both postoculars, 6 upper labials, third and fourth entering eye, sixth and third largest, 5 lower labials, fifth narrowed to a point; 2 subequal pairs of chin shields, first bordered by 4 labials, mental small, half as wide as rostral, scales in 13 rows, smooth, without apical pits, ventrals, 249, anal entire; subcaudals, 30, eye small, about twice the diameter of nostril, its vertical diameter equal to, or a little less than, its distance from mouth

Color in alcohol.—A large, median, black stripe from frontal to tail, covering three whole rows and two half rows of scales; behind supraocular begins a white line, covering two half rows of scales, extending to tail; behind eye a second black stripe begins and continues to tail, one whole and two half scales wide, below this, a white line one and a half scales wide, toward latter part of body there is a dotted line along the middle of the outer scale row, anteriorly the two black stripes merge in a band of black crossing head, involving the eyes but not reaching the mouth, a whitish band (red in life) in front of this; rostral dark, a white area (reddish in life) on each upper labial; ventrals with alternate bars of yellowish white and black, each bar two or three scales wide; the black encircles body at anus, chin with a dark

area in mental groove, and a spot on fourth lower labial; three broad pinkish bands, separated by narrow black bands, encircle tail; scute on extreme tip, pink.

Measurements of Dolichophis bilineatus (Peters)

	mm
Total length	335
Snout to vent	305
Tail	30
Length of head	10

Variation.—Not a great deal of variation is evident in this species save in the ventral and the subcaudal counts, the table shows this variation in the specimens examined.

TABLE 60.—*Measurements and scale counts of Dolichophis bilineatus (Peters)*

No.	Locality	Collector	Sex	Length	Tail	Ventrals
				mm	mm	
631	Iwahig, Palawan	C. M. Weber	♂	475	40	247
660	do.	do.	♂	450	31	252
662	do.	do.	♂	450	38	254
663	do.	do.	♂	450	35	261
664	do.	do.	♀	425	29	273
665	do.	do.	♀	475	28	275
681	do.	do.	♀	440	a25	278
901	do.	C. H. Lamb	♀	490	30	283
920	do.	do.	♂	445	35	260
949	do.	do.	♂	385	32	254
105	Palawan	C. M. Weber	♂	335	30	240
—	Mindanao	Unknown	♀	476	30	283

No.	Subcaudals	Anals	Preoculars	Postoculars	Temporals	Upper labials	Labials enter eye	Scale rows	Collection
631	29	1	1	2	1+2	6	3-4	13	Bureau of Science
660	27	1	1	2	1+2	6	3-4	13	Do.
662	30	1	1	2	1+2	6	3-4	13	Do.
663	30	1	1	2	1+2	6	3-4	13	Do.
664	23	1	1	2	1+2	6	3-4	13	Do.
665	34	1	1	2	1+2	6	3-4	13	Do.
681	(a)	1	1	2	1+2	6	3-4	13	Do.
901	27	1	1	2	1+2	6	3-4	13	Do.
920	28	1	1	2	1+2	6	3-4	13	Do.
949	28	1	1	2	1+2	6	3-4	13	Do.
105	30	1	1	2	1+2	6	3-4	13	E. H. Taylor
—	24	1	1	2	1+2	6	3-4	13	Santo Tomas

[a] Mutilated.

The ventral average for males (seven specimens) 252; the subcaudal, 29.4, for females (five specimens) ventrals, 276; subcaudals, 24, making an average of 24 more ventrals and 5.4 less

subcaudals in females, the body measurements also vary, the tail in the females being shorter, and the body longer, than those in equal-sized males

The color varies from black to reddish brown above, below, from yellow orange to red The spot on the head is reddish The dotted line on the outer row of scales may be present or absent

Two other species, nonpoisonous, occurring in Palawan have practically the same general coloration as the species above. These are *Polyodontophis bivittatus* and *Dryocalamus philippinus*. These two species may be readily recognized by the long slender tail and the absence of markings on belly In Busuanga *Dobophis bilineatus* is called *odto-odto* or *oto-odto* and is regarded as being deadly poisonous These names are also applied to the two harmless snakes mentioned above.

When disturbed or injured the snake turns up the end of its tail showing the brilliant red markings on the underside of the tail, and then writhes about, sometimes jumping, throwing the body from the ground, sometimes turning over on its back and continuing its aimless gyrations.

The species is known from Busuanga, Palawan, and Balabac in the Palawan Group, where it appears common.

Boulenger reports a specimen from Mindanao. Certainly it is rare in the last-mentioned place It is confined to the Philippines

DOLIOPHIS PHILIPPINUS (Gunther)

PLATE 35, FIGS 1 AND 2

Elaps intestinalis var GUNTHER, Cat Col Snakes (1858) 230
Callophis intestinalis GUNTHER, Proc Zool Soc (1859) 82, pl 16 fig A
Callophis intestinalis var *philippina* GUNTHER, Rept Brit India (1864) 349
Adenophis philippinus MEYER, Sitzb Ber Ak Wiss Berlin 36 (1886) 614, BOETTGER, Ber Senck Nat Ges (1886) 117, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 141
Doliophis philippinus BOULENGER, Cat Snakes Brit Mus 3 (1896) 404, GRIFFIN, Philip Journ Sci § D 6 (1911) 266, TAYLOR, Philip Journ Sci § D 13 (1918) 261

Description of species.—(From No 54, E H Taylor collection, collected at Bunawan, Agusan, Mindanao, November 12, 1912, by E H. Taylor.) (Adult male) Head small, not distinct from neck, rostral wider than deep, the portion visible from above a mere line, forming its narrowest suture with labial; internasals less than one-third the size of prefrontals, their mutual suture shortest; prefrontals in contact with posterior nasal and the

elongate preocular, frontal small, not twice as wide as supraocular, three-fourths as wide as long, nearly triangular, not as long as its distance from end of snout, parietals longer than frontal, slightly narrower, 2 nasals, the anterior largest, no loreal, preocular large, much longer than wide; supraoculars about as wide as long; 2 small postoculars, the superior largest; temporals 1 + 2, anterior large, followed by one of equal size, and a smaller one below, 6 upper labials, third and fourth entering eye; labials in the following order of size sixth, third, fifth, fourth, second, first, 6 lower labials, 4 touching anterior chin shields; eye small, about half as long as its distance from mouth; 2 pairs of chin shields, subequal in length, scales in 13 smooth rows, without apical pits; ventrals, 245, anal single, subcaudals, 25; tail short

Color in life.—Above a dark yellowish brown, each scale edged with darker, a median darker line, beginning on neck, continuing the length of body, broken occasionally by a yellowish spot, on either side of this darker median line are 2 lighter stripes, below which the ground color breaks into bands which encircle belly, these narrow ventrally and number 43 on body, with 2 on tail, below, they are dark brown to black, covering 4 or 5 ventral scales, and are separated by orange-colored bands, which cover 2 or 3 ventral scales but narrow on sides, they extend usually to fourth row of scales; the irregular series of dim light spots on the median dorsal dark line are between the ends of the light abdominal bands, head brown, with indistinct darker shading, darker between eyes and on tip of snout, a black spot in the middle of sixth labial, chin variously mottled with brown and light; first labials with light spots, a white line crosses sixth labial, chin spotted with dark, bands under tail a brilliant scarlet, much wider than those on belly, almost surrounding tail.

Measurements of Dolichus philippinus (Gunther)

	mm
Total length	625
Snout to vent	576
Tail	49
Width of head	9 5
Length of head	13 5

Variation.—As compared with the type, the described specimen differs in having the frontal somewhat shorter than its distance from end of snout, the ventrals are very much more numerous than in the type, the latter having only 218, while our specimen has 245: the number of subcaudals is nearly equal. The known range of ventrals is 218 to 255, of subcaudals, 25 to 27

The second Bunawan specimen, No. 53, E. H. Taylor collection, is much darker brown, and the bands on the belly, 38 in number, are black. In the Manila specimen the median dark line is broken regularly by the yellowish longitudinal spots, which are about one-third as long as the intervening dark areas. There are 41 bands on the belly.

A young specimen captured near Zamboanga, Mindanao, has only three labials touching the anterior chin shields, and varies markedly from the usual markings. The head is yellow, a black spot involving the eye, and there is a spot on the sixth labial. Instead of the median dark line, broken by a light spot, there is a light line broken by short, black, rectangular spots, less than half the length of the intervening light areas; on either side of the median line is a dark brown, darker-edged stripe beginning at the eye and continuing regularly and unbroken to the tail, the belly is barred with bands of black and yellow, the color reaching laterally up to the fourth scale row; the black bars are wider laterally, covering two or three ventral scales; there are a few spots on the chin; the tail is reddish below, with two narrow black bars.

TABLE 61.—*Measurements and scale counts of Doliophis philippinus (Gunther)*

No.	Locality	Collector	Sex or age	Length
				mm.
53	Bunawan, Agusan	E. H. Taylor	♀	545
54	do	do	♂	625
711	Manila	Mrs. Graham	♀	440
R 422	Zamboanga	E. H. Taylor	yg.	180

No.	Tail	Ventrals	Subcaudals	Upper labials	Labials enter eye	Scale rows	Collection
	mm.						
53	40	255	27	6	3, 4	13	E. H. Taylor
54	49	245	25	6	3, 4	13	Do.
711	30	261	26	6	3, 4	13	Bureau of Science
R 422	14	244	27	6	3, 4	13	Do.

Remarks.—The type, a male specimen, was collected in the Philippines by H. Cuming, the exact locality being no longer known. In habits the species is very similar to its congener, *Doliophis bilineatus*, and the curious habits recorded under that species have also been observed in this species. It is a much

rarer form The specimens I collected in Mindanao were found under rotting logs, when exposed to the light they lay quiet, making no endeavor to escape; when disturbed they began their aimless writhing and jumping Known from Bunawan, Zamboanga, Mindanao, and Luzon The species appears to be confined to the Philippines.

AMBLYCEPHALIDÆ

Amblycephalidæ GUNTHER, Rept Brit India (1864) 324, BOULENGER Fauna Brit India, Rept (1890) 414, Cat Snakes Brit Mus 3 (1896) 438

"Facial bones slightly movable; præfrontal not in contact with nasal, ectopterygoid (transpalatine) present; pterygoid short, not extending to quadrate or mandible, supratemporal rudimentary, maxillary horizontal, parallel with or converging posteriorly towards the palatine Mandible without coronoid bone Solid teeth in both jaws.

"The hypapophyses disappear in the anterior third of the dorsal vertebral column." (*Boulenger*)

The family contains five genera, two of which are confined to southeastern Asia and the Malay Archipelago, and three are confined to Central and South America. Not poisonous *Haplopeltura* is the only Philippine genus

Genus HAPLOPELTURA Boulenger

Dipsas, part, SCHLEGEL, Phys Serp 2 (1837) 257

Aplopeltura DUMÉRIL and BIBRON, Mem Ac Sci 23 (1853) 463, Erp Gen 7 (1854) 444

Amblycephalus GUNTHER, Cat Col Snakes (1858) 184, JAN Elenco Syst Ofid (1863) 100; GUNTHER, Rept Brit India (1864) 325, BOETTGER, Ber Senck Nat Ges (1886) 115, CASTO DE ELERA, Cat Fauna Filipinas 1 (1895) 438

Haplopeltura BOULENGER, Cat Snakes Brit Mus 3 (1896) 439

"Maxillary bone very short, deep, with five subequal teeth; maxillary and mandibular teeth decreasing in size posteriorly Head distinct from neck, eye large, with vertical pupil; nasal entire Body strongly compressed; scales smooth, without pits, oblique, in 13 rows, vertebral row strongly enlarged; ventrals rounded Tail moderate, subcaudals single" (*Boulenger*)

The genus contains a single species, which has a wide distribution from the Malay Peninsula throughout the Malay Archipelago

HAPLOPELTURA BOA (Boie)

PLATE 34, FIGS 7 TO 9

Amblycephalus boa BOIE, Isis (1828) 1034, GUNTHER, Cat Col Snakes (1858) 184, Rept Brit India (1864) 325, JAN, Icon Gen (1870)

37, pl 3, fig 2, MODIGLIANI, Ann Mus Genova, II 7 (1889) 120, FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 81, BOETTGER, Ber. Senck Nat Ges (1886) 115, CASTO DE FLERA, Cat Fauna Filipinas 1 (1895) 438

Dipsas boa SCHLEGEL, Phys Serp 2 (1837) 284 pl 11, figs 29, 30, CANTOR, Cat Mal Rept (1847) 78, pl 40, fig 3

Aplopeltura boa DUMÉRIL and BIBRON, Erp Gen 7 (1854) 444

Haplopeltura boa BOETTGER, Ber Offenb Ver Nat (1892) 134; BOULENGER, Cat Snakes Brit Mus 3 (1896) 439, GRIFFIN, Philip Journ. Sci § D 6 (1911) 267

Description of species.—(From No 165, E. H Taylor collection, collected at Bunawan, Agusan, Mindanao, September 29, 1912, by E. H. Taylor.) (Adult female.) Head short and deep; rostral very narrow, nearly twice as high as wide, forming its longest suture with nasal, just visible from above, sutures with internasals smallest; internasals twice as broad as long, in contact with highest loreal, forming its shortest suture with it; sutures with prefrontals and nasals subequal; prefrontals not as wide as internasals, but longer and larger, prefrontal suture shorter than that between internasals; frontal very large, one and two-thirds times to twice as long as broad, narrowed in the middle, longer than parietals, and much longer than its distance from end of snout, not twice as wide as supraoculars, in contact with upper preocular; parietals but little longer than wide, somewhat broken up behind, followed by several, somewhat enlarged, occipital shields, nasal single, in contact with 2 labials and 3 loreals; latter superimposed, upper nearly square, largest, lower longest, not entering eye, in contact with 2 labials, 2 preoculars, upper largest; 4 suboculars (3 on left side) in a row, continuous with preoculars, no postoculars; supraoculars elongate, extending above and behind eye, nearly half surrounding it, temporals 3 + 3, 9 upper labials, none entering eye, 12 lower labials, mental small with first 2 pairs of labials in contact behind it, the usual chin shields are replaced by 3 unequal pairs of broad plates, filling all the space between labials and first ventrals, the usual groove is missing on chin, eye very large, equal or very nearly equal to its distance from end of snout, greater than its distance from mouth; head short, narrow, and very thick, distinct from neck, with 2 rather prominent occipital knobs; scales in 13 rows, the median row enlarged, and an enlarged outer row, tail prehensile, sharply pointed, body much compressed; ventrals, 156, anal single; subcaudals, 104; tail narrows very greatly immediately behind anus.

Color in life.—Above yellowish brown of varying shades, with large, irregular, darker and lighter blotches; small black dots

scattered over body, a darker area from occipital region to frontal, remaining part of head a dim reddish yellow color, darkly powdered with brown, a broad dark line from eye to mouth, with a creamy yellow spot before and behind it, covered with dark minute spots of brown, a light area on temporal region, rostral dark, mental brownish, chin and throat light cream, powdered sparsely with brown

Measurements of Haplopeltura boa (Boie)

	mm
Total length	617
Tail	200
Head width	11
Head length	17

Variation.—There is marked variation in the number of ventrals and subcaudals. Boulenger* records the following range: ventrals, 148 to 170; subcaudals, 88 to 120. This range does not seem to be due to sex variation, as is the case in many species.

TABLE 62.—*Measurements and scale counts of Haplopeltura boa (Boie)*

No.	Locality	Collector	Sex	Length	Tail	Ventrals	Subcaudals	Anals
				mm	*mm*			
163	Bunawan, Agusan	E. H. Taylor	♂	693	240	156	108	1
164	do	do	♂	637	225	156	108	1
165	do	do	♀	617	200	156	104	1
1741	do	do	♀	(a)				1

No.	Preocular	Postocular	Temporals	Upper labials	Lower labials	Subocular	Loreals	Scale rows	Collection
163	3	0	3+3	8	10	4	3	13	E. H. Taylor
164	3	0	4+4	9	9	4	3	13	Do.
165	2	0	4+3	9	12	3-4	3	13	Do.
1741	3	0	4+4	9	10	4	3	13	Bureau of Science

[a] Badly mutilated.

Remarks.—This snake has remarkable protective coloration and lives for the most part about dead trees. All specimens I have taken were found in such localities. On being disturbed they would fall to the ground where they would stiffen so as to appear like sticks, and could be picked up, still somewhat rigid. Their imitation of a stick is especially good, since the coloration has the appearance of lichens on dead wood.

* Loc. cit.

Known from eastern Mindanao, Palawan, and Balabac, in the Philippines. Also known from Malay Peninsula, Java, and Borneo It appears to have been collected in the Islands for the first time by Cuming, 1834–40

CROTALIDÆ

Maxillary vertically erectile, perpendicular to the ectopterygoid, pterygoid reaching quadrate or mandible; equipped with large, curved, hollow fangs, a deep pit in maxillary, represented externally by a blind sac Poison gland confined to head. Deadly poisonous.

A single genus of this family is represented in the Philippines

Genus TRIMERESURUS Lacépède *

Lachesis DAUDIN, Hist Rept (1803) 349, WAGLER, Syst Amph (1830) 176, GRAY, Zool Misc (1842) 50, Cat Vip Snakes (1849) 13, DUMERIL and BIBRON, Erp Gén 7 (1854) 1483, PETERS, Mon Berl Ak (1862) 673, JAN, Elenco Syst Ofid (1863) 124, BOULENGER, Cat Snakes Brit Mus 3 (1896) 529

Trimeresurus, part, LACÉPÈDE, Ann Mus 4 (1804) 209

Tropidolæmus WAGLER, Syst Amph (1830) 176, DUMERIL and BIBRON, Erp Gén 7 (1854) 1523

Trigonocephalus OPPEL, Ordn Rept (1811) 50, PETERS, Mon Berl Ak (1862) 672

Trimeresurus GRAY, Zool Misc (1842) 50, Cat Vip Snakes (1849) 13; PETERS, Mon Berl Ak (1862) 672

Megæra WAGLER, Syst Amph (1830) 174, GRAY, Zool Misc (1842) 49, Cat Vip Snakes (1849) 11, PETERS, Mon Berl Ak (1862) 671

Parias GRAY, Cat Vip Snakes (1849) 11

Bothriops WAGLER, in Spix, Serp Bras (1824) 50

"Upper surface of head covered with scales or small shields. Body cylindrical or compressed; scales smooth or keeled, with or without apical pits Tail moderate or short, subcaudals single or in two rows." (*Boulenger.*)

Southeastern Asia, Malaysia, Central America, and South America Snakes of this genus are commonly known as pit vipers They are deadly poisonous

Key to the Philippine species of Trimeresurus Lacepède

a^1 Head scales smooth

b^1 Supraocular narrow

c^1 Uniform yellow, with dark yellow lateral streak
T megregori Taylor (p 284)

c^2 Tail purplish brown, with or without small yellowish dorsal spots, no lateral yellow or white stripe, tail dark, like body
T halieus Griffin (p 286)

* The synonymy refers chiefly to designation of Philippine forms

c^3 Green or bluish above with or without a series of brown spots; a lateral whitish yellow line, ventrals, 170 to 187, tail light colored T flavomaculatus (Gray) (p 288)

c^4 Above green, a yellow line below eye, a lateral yellow stripe, tail colored like rest of body, ventrals, 145 to 170 T gramineus (Shaw) (p 290)

b^2 Supraocular large Ventrals, 187 to 203, subcaudals, 66 to 82, tail light color. T schultzei Griffin (p 292)

a^2 Upper head scales keeled, gular scales keeled, body scales keeled

b^1 Scale rows, 21 to 25, 10 to 15 scale rows between supraoculars T waglerı (Boie) (p 296).

b^2 Scale rows, 19, 7 scales between supraoculars T philippensis Gray (p 295).

TRIMERESURUS MCGREGORI Taylor

Trimeresurus mcgregori TAYLOR, Philip Journ Sci 14 (1919) 110

Description of species.—(From the type, No 748, Bureau of Science collection; collected on Batan Island, Batanes, lying between Luzon and Formosa, June 12, 1907, by Richard C. McGregor.) Rostral a little wider than high, slightly narrower at top, visible above as a narrow line, bordered behind by a rectangular scale, distinctly enlarged, which separates the 2 much-enlarged supranasals; latter not or barely in contact with rostral, separated from anterior supraocular by 3 (4 on right side) scales, 2 enlarged supraoculars, followed by 1 or 2 small scales above eye; nasal single, large, triangular, visible above as a narrow line, the nostril, which is vertically oval, pierced near lower border, canthus rostralis sharp, formed by edge of nasal, the narrow elongate loreal following nasal and superior preocular; facial pit surrounded by second labial, which forms anterior border of pit, and by middle and lower preoculars, which are much elongated, 3 preoculars, a narrow elongate subocular, as long as orbit; 2 or 3 postoculars; 10 supralabials,

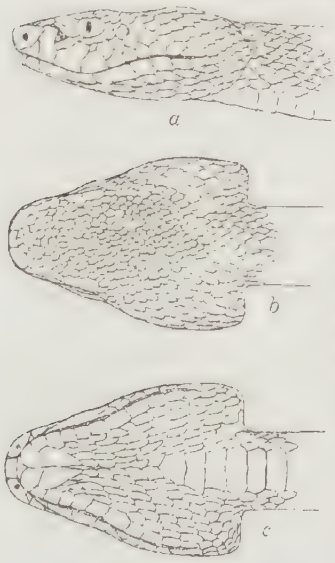

FIG. 31. *Trimeresurus mcgregori*, Taylor, from the type. *a*, head, lateral view; *b*, head, dorsal view; *c*, head, ventral view. × 1

first small, triangular, narrowly in contact with rostral; second high, reaching almost to canthus rostralis, third much the largest, broadly in contact with subocular; fourth and fifth scales each separated from subocular by a single scale; temporal scales distinctly enlarged, larger than or as large as posterior labials, mental broadly triangular, wider than rostral, 11 lower labials, first, seventh, and eighth largest, a pair of large chin shields, much longer than wide, broadly in contact, bordered by 3 labials, 5 pairs of scales between chin shields and first ventral, 28 scales from angles of mouth across occiput, 15 scales between supraoculars; 29 scale rows on neck (at seventh ventral); 21 rows on body; ventrals, 175, subcaudals, 56; anal single; temporal scales perfectly smooth, body scales slightly keeled on the 8 or 10 median rows, head rather angular, flattened above, and depressed in supraocular region; tail prehensile

Color in life.—Above, bright yellow with a darker yellow lateral streak (in alcohol entire snake almost paper white with practically no trace of marking), tail with a few small, reddish brown spots near tip.

Measurements of type and cotype of Trimeresurus mcgregori Taylor

	Type mm	Cotype mm
Total length	865	702
Tail	120	100
Head width	25	25
Head length	36	33
Eye to end of snout	12	9.2
Eye to mouth	6	5
Supraocular width	16	14
Length of eye	4.5	4
Width of eye	3.2	2.8

Variation.—A second specimen from the same locality shows the following variations. The scale counts are as follows: ventrals, 179; subcaudals, 59; scale rows on neck (at seventh ventral), 29, body, 21, scales between eyes, 13, upper labials, 11–10; lower labials, 12, 3 scales behind supranasals bordering rostral. On the right side, the third labial does not touch suboculars; the lateral stripe covers one whole and a half scale rows.

Remarks.—This species belongs to the *Trimeresurus gramineus* (Shaw) group, which includes *T. flavomaculatus* and *T. halieus* of the Philippines. It is differentiated from the other species, however, by the striking color with no dark markings, the larger number of scales on snout and supraocular region, and the larger unkeeled temporals, the supranasals are larger and more clearly differentiated. Mr. McGregor, its discoverer, and for

whom it has been named, states that it is not rare on Batan Island In a memorandum dated June 12, 1907, he states the following

Our party went to the summit of the mountain On the return a large yellow snake was found resting at about 2 meters from the ground coiled on some leaves that had lodged among the thick stems of a kind of large grass

The snake was struck with an alpen-stock and fell to the ground In attempting to put a string on its neck I was scratched by the fangs, between the last two joints of my thumb Mr H G Ferguson immediately made several cuts across the wound with a pocket knife and tied a string around the thumb My hand and forearm were swollen by evening The swelling subsided within a couple of days There was very little pain, and no further trouble was experienced

TRIMERESURUS HALIEUS Griffin*

Trimeresurus halieus GRIFFIN, Philip Journ Sci § D 5 (1910) 214 (*Trimeresurus* err typ) § D 6 (1911) 267

Description of species.—(From No 772, Bureau of Science collection, collected on Polillo, October 1, 1909, by C Canonizado) Head broadly triangular; canthus rostralis rather rounding, rostral broader than high, bordered behind by 2 internasal scales supranasals somewhat enlarged; nasal irregular, undivided, a small scale between nasal and first 2 labials, first labial small, triangular, second high, entering pit and forming its anterior border, in contact with the elongate canthal scale which lies between the 2 superior preoculars and with the nasal; pit surrounded by 2 preoculars and first labial; supraocular enlarged, irregular in shape, a narrow elongate subocular, touching inferior preocular and third and fourth labials (third only on left side); separated from other labials by a single row of scales, 3 preoculars, 3 postoculars, 10 upper labials, 12 lower labials; 3 labials border the single pair of chin shields; mental triangular, pointed behind; 12 scales between supraoculars, 28 scales across head between angle of jaws, temporal scales rather enlarged, not keeled, scales on head irregular in size and shape, rather rounding, and not or but slightly imbricate, not keeled; scales on posterior part of head imbricate and pointed, scale rows on neck (counting from tenth ventral), 25, on body 21, median 10 rows of scales distinctly keeled, more prominently on posterior part; ventrals, 178; subcaudals, 56, tail distinctly prehensile, anal single

* In establishing this species Griffin had before him ten specimens from Polillo, the only locality where it has been found No particular specimen was designated as the type

Color in alcohol.—Purplish brown with a few, very small, yellowish brown spots on posterior part of body, below dull purplish, the ventrals with light edges, tail uniform color like body, no trace of a lateral light line.

Measurements of Trimeresurus halieus Griffin

	mm
Total length	912
Snout to vent	782
Tail	130
Head length	41
Head width	27

Variation.—The ventrals range between 170 and 182; the subcaudals between 52 and 59. There are 10 to 13 scales between the supraoculars, certain of the specimens are a uniform color, others have large, distinct, irregular, brown bands, in some specimens continuing even on the tail; this is not due to age, as some of the smallest and some of the largest specimens are so marked. In life the specimens are often green.

Remarks.—This species is very closely related to *Trimeresurus flavomaculatus*, and *T. gramineus* is separated from both chiefly by color. The scale differences are rather negligible. The average of ventrals in the Polillo form is 178, of subcaudals, 55, which is 7 or 8 lower than the average for *T. flavomaculatus*. The very characteristic white line along the outer scale rows is usually wanting.

Griffin * remarks on its habits:

> The specimens were all collected along the banks of streams or in damp localities.
>
> This snake seems to leave the ground very rarely. When the natives of the islands go at night along the streams to catch mudfish by torchlight the snakes are commonly seen near the edge of the water, and the fishermen say that they are there for the same purpose as themselves, and for this reason call the snake *Mánda-dalág*, which, literally translated, means "the fisher of the *dalág* (or mud-fish)." Sr. Cesario Canonizado captured one specimen which had buried most of its body in the sand close to the water's edge. The place where the snake was lying was partly covered with water, while a few inches away was deeper water in which numerous small fish were swimming about for which the snake *appeared* to be lying in wait [illegible]

The stomach of No. 764 contained an entire frog. In the intestine of No. 763 were found a few scales, probably of a fish. The intestine of No. 765 contained a large ball of hair of a rat.

* Philip. Journ. Sci. § D. 5 (1910) 214.

I have examined recently a single freshly preserved specimen from the Patnanongan Island, east of Polillo The color above is green, lighter on the sides, the belly is yellowish green, medially there is a series of irregular, reddish brown blotches from the head to the end of the body, there is a broken series of bright yellow spots along the sides of the body, more prominent toward the tail; sometimes the yellow color extends slightly on the ventral The skin between the scales is black and flesh color, alternating dorsally, the black area widening on the sides, the edges of the scales over the black area are somewhat bluish The tail is dark lavender traversed by 16 black bars which do not meet below; below, behind anus, the tail is blue and yellow, spotted black; on the latter half the color is grayish white There are 181 ventrals and 59 subcaudals It is highly probable that this species will later be regarded as a subspecies of *Trimeresurus flavomaculatus* It will be remembered that Gray designated three forms under the names *flavomaculata, ornata,* and *variegata*

TRIMERESURUS FLAVOMACULATUS (Gray)

Megæra flavomaculata GRAY, Zool Misc (1842) 49
Megæra ornata GRAY, Zool Misc (1842) 49
Megæra variegata GRAY, Zool Misc (1842) 50
Parias flavomaculata GRAY, Cat Vip Snakes (1849) 11
Parias ornata GRAY, Cat Vip Snakes (1849) 11
Parias variegata GRAY, Cat Vip Snakes (1849) 11.
Trimeresurus flavomaculatus GUNTHER, Proc Zool Soc (1879) 79, GRIFFIN, Philip Journ Sci § D 6 (1911) 267
Trimeresurus schadenbergi FISCHER, Jahrb wiss Anst Hamburg 2 (1885) 116
Lachesis flavomaculatus BOULENGER, Cat Snakes Brit Mus 3 (1896) 556
Trimeresurus gramineus MULLER, III Nacht Cat Herp Samml Basel Mus (1883) 19

Description of species.—(From No 64, Bureau of Science collection) Snout rather short head not especially flattened; rostral broader than high, narrowed at top to less than half its width, bordered behind by 2 internasal scales, visible from above; supranasals enlarged, separated from each other by 2 scales, and from loreal by a single scale, loreal folded across canthus, which is not sharp but rather rounded, supraoculars longer than diameter of eye, extending some distance in front of their anterior vertical level, 10 scales in a line between supraoculars, scales on the head imbricate, smaller on back part of head, nasal large, nostril pierced in its middle lower part, 9 upper labials, first small, second large, forming anterior border of pit, third largest,

last 5 subequal in size; a large, narrow, semicircular subocular touching third labial, separated from others by a single row of enlarged scales, 3 preoculars, the middle and lower forming the upper and lower borders of pit, upper largest, all entering eye; 3 postoculars, lower temporal scales larger than upper, no trace of keels present; 11 to 12 lower labials, mental triangular, pointed behind chin shields, in contact with 3 labials; body scales narrow, pointed sharply behind, faintly keeled on the 8 median rows, in 21 rows around body; 25 about neck, ventrals, 180; subcaudals, 69; anal single

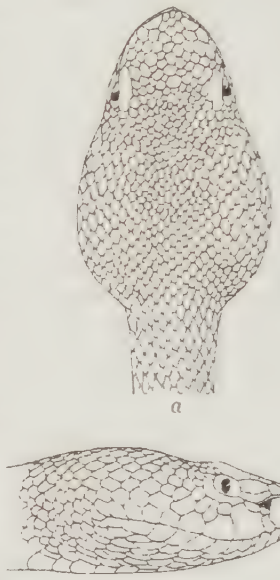

Fig. 32. *Trimeresurus flavomaculatus* (Gray), after Boulenger's *Lachesis flavomaculatus*. *a*, head, dorsal view; *b*, head, lateral view

Color in alcohol.—Above ultramarine blue with a series of about 54 irregular brown spots on back; head reticulated with brown; laterally with a series of yellowish, small spots, usually connected, intermixed with brownish, involving edges of some ventrals and some scales of the second row; below greenish blue, the ventrals edged with whitish; chin with numerous white or bluish white scales, forming a light spot at angle of jaws; tail variegated with bluish and lavender-brown, lighter toward tip, lateral spots of yellow and brown on ventral part of tail; skin between scales brownish; eye moderate, the length equal to its distance from mouth

Measurements of Trimeresurus flavomaculatus (Gray)

	mm.
Total length	855
Snout to vent	712
Tail	143

Variation.—Specimens I have examined in the Bureau of Science collection, and those of Santo Tomás University, have the following variation in scalation. Ventrals, 171 to 182, average, 178; subcaudals, 56 to 69, average, 63. Boulenger records the

following scale variations· Ventrals, 170 to 187, average, 179; subcaudals, 55 to 73, average, 62. The larger proportion of specimens I have examined (five out of nine) have 2 labials touching subocular; upper labials vary between 9 and 11, 10 being the usual number, lower labials, 10 to 13, 11 being the usual number, 9 or 10 rows of scales between supraoculars, 10 predominating. The scale rows are invariably 21 (neck 25.) The color and markings vary considerably; usually a bright or olive green in life (bluish in alcohol), either uniform or with numerous brown spots or blotches; the skin between the scales brownish or blackish, the broken line of yellow dots on the outer scale rows is very characteristic of this species, and is present in all specimens examined

Remarks.—This species is found only in the Philippines, apparently Specimens have been reported from Luzon, Mindanao, and Batan Island,* north of Luzon. Two specimens in the Santo Tomás Museum are labeled Bohol and Jolo, respectively

TRIMERESURUS GRAMINEUS (Shaw)

Coluber gramineus SHAW, Gen Zool 3 ² (1802) 420
Coluber viridis BECHSTEIN, Lacepède's Naturg Amph 4 (1802) 252, pl 39, fig 1
Vipera viridis DAUDIN, Rept 6 (1803) 112
Trimeresurus viridis LACÉPÈDE, Ann Mus Paris 4 (1804) 209, GRAY, Cat Vip Snakes (1849) 7, Ann & Mag Nat Hist II. 12 (1853) 391
Cophias viridis MERREM, Tent Syst Amph (1820) 155
Trigonocephalus viridis SCHLEGEL, Phys Serp 2 (1837) 344, pl 19, figs 12 and 13
Trigonocephalus erythrurus CANTOR Proc Zool Soc London (1839) 31
Trimesurus albolabris GRAY, Zool Misc (1842) 48
Trigonocephalus gramineus part, CANTOR, Cat Mal Rept (1847) 119
Trimesurus elegans GRAY, Ann & Mag Nat Hist II. 12 (1853) 391
Bothrops viridis DUMÉRIL and BIBRON, Erp Gen 7 (1854) 1512 PETERS, Mon Berl Ak (1861) 691
Trimeresurus gramineus GUNTHER Rept Brit India (1864) 385; STOLICZKA, Journ As Soc Bengal 39 (1870) 216, ANDERSON, Proc. Zool Soc London (1871) 194, An Zool Res Yunnan (1879) 828. THEOBALD, Cat Rept Brit India (1876) 219, FISCHER, Jahrb wiss. Anst Hamburg 2 (1885) 81 BOETTGER, Ber Senck Nat Ges (1887) 50, (1888) 188, (1894) 135, BOULENGER, Fauna Brit India, Rept (1890) 429, SCLATER, Journ As Soc Bengal 60 (1891) 248, STEJNEGER, Journ Sci Coll Tokyo 12 ² (1898) 225, Bull U S Nat Mus 58 (1907) 480, GRIFFIN, Philip Journ Sci § A 4 (1909) 600

* These two specimens, recorded by Griffin (loc cit), are referred to a distinct species

Trimeresurus erythrurus GUNTHER, Rept Brit India (1864) 386; SIOLICZKA, Journ As Soc Bengal 39 (1870) 217, FAYRER, Thanatoph Ind (1874) pl 14; THEOBALD, Cat Rept Brit India (1876) 220, MULLER, Verh Nat Ges Basel 8 (1887) 280, BOETTGER, Ber Senck Nat Ges (1886) 119

Lachesis gramineus BOULENGER, Cat Snakes Brit Mus 3 (1896) 554, BOETTGER, Kat Schl. Mus Senck (1898) 139

Description of species.—(From Stejneger, Bull. U S. Nat Mus.) "*Adult male*, U S. N. M No 36516, Taihoku (Taipa), Formosa; * * * Rostral as high as broad, very narrow above, nearly triangular bordered behind by a single scale between the upturned anterior corners of the nasal, just visible from above; canthus rostralis sharp, formed anteriorly by the upturned edge of the nasal, the upturned edge of an elongated shield corresponding to the loreal * * * and the upturned portion of the upper preocular; head shields small, smooth anteriorly, keeled on parietal and occipital regions, supraoculars very narrow, occupying only the outer edge of the supraocular region, their width being scarcely more than one-fifth the distance between them, about 12 scales on a line between the supraoculars; nasal large, smooth, undivided, with a round nostril pierced near the lower edge; behind it above, on the canthal ridge an elongated shield, being the loreal of the other species, below it, separating it from the first supralabial, and between nasal and the upper portion of second supralabial which enters the pit, two small scales, one above the other, two elongate anterior preoculars, the upper, which is somewhat wider anteriorly turned up over the canthal ridge, the lower forming the upper border of the large pit; the subfoveal as large as the lower preocular, posteriorly entering eye between the latter and the subocular, a long, narrow, crescentic subocular anteriorly in contact with subfoveal, separated from fourth and subsequent supralabials by one and posteriorly two rows of scales; three small postoculars on left side, two on right, temporals numerous, lower ones largest, upper ones smaller, keeled; 10 supralabials, first small, triangular, second very high, forming anterior border of pit, third largest, fourth slightly larger than fifth to tenth, which are subequal; 3 lower labials in contact with anterior chin-shields, posterior chin-shields scarcely differentiated; 21 rows of narrow, pointed, keeled scales without apical pits, 161 ventrals; anal entire; 69 pairs of subcaudals, tip of tail rather blunt Color (in alcohol) above saturated uniform 'parrot-green,' from the subocular, under the center of the eye, a narrow, strongly defined, pale-yellowish line, the lower row of temporals

and across the last supralabial to the side of neck and from there to near the tip of the tail on the middle line of the outer scale row, the lower edge of which is somewhat darker than the rest of the body; underside paler green, washed with blue so as to be almost 'beryl-green' toward the sides, tips of tail colored like the rest of the body.

Measurements of Trimeresurus gramineus (Shaw)

	mm
Total length	618
Snout to vent	488
Vent to tip of tail	130

"The *female* appears to have a relatively much shorter tail"

Variation.—This widely distributed species is quite variable in scalation and color. According to Boulenger,* the ventral range is 145 to 175, average, 162.5, subcaudal, 53 to 75, average, 60. Rarely there are 19 or 23 rows. The scales between oculars vary between 8 and 13; the nasal is sometimes divided, the temporal scales are smooth. Bright green, rarely olive or yellowish, with or without crossbands; the yellow streak is usually present.

Remarks.—Known from India to Formosa, Siam, Sumatra, Java, Timor, and Borneo. In the Philippines it has been reported from Paracale, Luzon, by Peters, as *Bothrops viridis*, from southern Mindanao by Fischer; and from Palawan by Griffin †. I regard it of rather doubtful occurrence in the Philippines.

TRIMERESURUS SCHULTZEI Griffin

PLATE 36

Trimeresurus schultzei GRIFFIN, Philip. Journ. Sci. § A, 4 (1909) 601, § D, 6 (1911) 267.

Trimeresurus gramineus GRIFFIN, Philip. Journ. Sci. § A, 4 (1909) 600.

Trimeresurus formosanus BOULENGER, Ann. & Mag. Nat. Hist. VI, 14 (1894) 85.

Description of species.—(From No. 614, Bureau of Science collection, collected at Iwahig, Palawan, May 27, 1908, by C. M. Weber.) (Adult female.) Head broadly triangular, rather rounding on canthus rostralis and about angles of jaws, snout rather blunt, short, the line of upper jaw very strongly curving upward from a point below eye; rostral perpendicular, distinctly broader than high, bordered behind by 3 scales, the 2 immediately

* Cat. Snakes Brit. Mus. 3 (1896) 555 and 556.

† The specimen which Griffin has referred to this species belongs, I believe, to *Trimeresurus schultzei*.

above nasals largest, nasal longer than high, nostril pierced near center, and a small fold or semisuture to edge of scale above nostril; pit surrounded by second labial and 2 of the 3 preoculars, the 3 preoculars longer than high, the upper largest, all entering eye; supraoculars elongate, irregular on their inner side; 2 small postoculars and a long narrow subocular touching lowest preocular; scales in temporal region much larger than those on top of head; 10 upper labials (11 on right side), third in contact with subocular; a scale inserted between subocular and fourth labial; 2 scales between subocular and fifth labial; 13 lower labials, 3 touching chin shields which are elongate, these chin shields are followed by 4 paired scales; scales in 21 rows about body, median scales strongly keeled, outer slightly, anterior head scales smooth, enlarged; ventrals, 198, subcaudals, 66; tail prehensile; scales on head small, rounding, irregular, subimbricate, not keeled

Color in alcohol.—Above, dark purplish brown with about 62 black, irregular, dim bars crossing back; top of head strongly reticulated with black lines; outer row of scales bright yellow, underpart of head muddy yellow with a darker spot under each jaw and darker areas on labials; a yellow line from eye to angle of mouth. Below, brownish to bluish lavender, the ventrals edged with black; tail dull flesh color with dim purplish mottlings laterally, and with no traces of bars

Measurements of Trimeresurus schultzei Griffin

	mm.
Total length	1,220
Snout to vent	1,022
Tail	198

Variation.—The young are bright yellowish to bluish green, also barred with black, belly scales indistinctly edged with black; reticulations on head very distinct, sometimes forming a flower-shaped marking on occiput. In a specimen,* 576 millimeters long, the color is brown. The outer row of scales is here spotted with a light purplish color.

Remarks.—I have taken an adult specimen for the description rather than the type which is at hand, since the latter is a very small, immature specimen

* This specimen is recorded in the catalogue of the Bureau of Science collection as *T. gramineus*. Doctor Griffin reports it as the first occurrence of this species in the Philippines. I believe that it should be regarded as *T. schultzei*, as the two species differ in no essential particular. See Philip. Journ. Sci. § A. 4 (1909) 600.

Griffin in his description has pointed out the differences between *T. graminens* and the present species, but makes no mention of its relation with *T sumatranus* Raffles, with which it has its closest affinity Unfortunately no specimens of that species are at hand; but, judging from descriptions and also from the figure given by Lidth de Jeude, the following differences obtain.

In *Trimeresurus schultzei* the young are green with black bars laterally connected with a zigzag black line; the top of the head is very strongly reticulated with black; the head is short, the snout blunt; the scales of the outer row are entirely yellow, which color does not extend over either the second scale row or the ventrals, there are no lateral spots. In the adult the color becomes darker, the green apparently disappearing; the dark markings do not change

TABLE 63.—*Measurements and scale counts of Trimeresurus schultzei Griffin*

No	Locality	Collector	Sex or age	Length	Tail	Ventrals	Subcaudals
				mm	mm		
[a]316	Iwahig Palawan	W Schultze	♂	330	46	208	70
614	do	C M Weber	♀	1 220	198	198	66
897	do	C H Lamb	♂	386	65	193	75
898	do	do	♂	425	76	193	75
[a]1566	Palawan	Unknown	♀	576	82	196	68
5106	Balabac	C M Weber	♂	265	42	198	68
5107	do	do	♂	360	65	193	78
5109	do	do	♂	385	65	194	71

No	Anals	Upper labials	Labials touch subocular	Lower labials	Labials touch chin shields	Supraoculars	Preoculars	Postoculars	Scales touch supraoculars	Scale rows	Collection
[a]315	1	10	1	11-12	3-4	1	3	2	9	23	Bureau of Science
614	1	10-11	1	13	3	1	3	2	11	21	Do
897	1	10	1	11-12	3	1	3	2	10	21	Do
898	1	10	2	12-13	4	1	3	2	9	23	Do
1566	1	10	1	13	3	1	3	2	9	21	E H Taylor
5106	1	10-11	1	13	3	1	3	2	9	21	Do
5107	1	8	1	10	3	1	3	2	9	21	Do
5109	1	10-11	1	13-14	3	1	3	2	10	21	Do

[a] Type

In *T sumatranus* the white lateral line covers 2 half rows of scales, and the dorsal scales are only slightly keeled In

T schultzei, the ventrals range from 187 to 203 and average 196, the subcaudals range from 66 to 82 and average 71. The scales are in 21 to 23 rows, and those on the top of the head are flat and smaller than in *T. sumatranus* There are 10 scales between supraoculars In *T sumatranus* the ventrals range from 180 to 191 and average 187, and the subcaudals range from 58 to 77 and average 68

The species is found only in Palawan If the specimen of *Trimeresurus formosanus* found in Palawan by Mr Everett is referable to this form, as I strongly suspect, *Trimeresurus sumatranus* must of necessity be excluded from the Philippine fauna

TRIMERESURUS PHILIPPENSIS Gray

PLATE 37, FIG 1

Trimeresurus philippensis GRAY, Zool Misc (1842) 48, Cat Vip Snakes (1849) 10

Tropidolaemus hombroni GUICHENOT, in Dumont d'Urville, Voy Pôle Sud, PETERS, Mon Berl Ak (1867) 29

Trimeresurus wagleri philippensis GRAY, Zool, Rept (1853) 23, pl 2, fig 2, DUMÉRIL and BIBRON, Erp Gen 7 (1854) 1527

Description of species.—(From an unnumbered specimen in the Santo Tomás Museum, Manila; locality and collector unknown.) Rostral higher than wide, visible above as a point, nasal rather large, longer than high, nostril pierced near center, appearing above as a mere line, 2 rather enlarged prefrontals forming a median suture, 3 scales bordering canthus rostralis in front of eye, supraocular enlarged, as long as or longer than, diameter of eye; 7 scales between supraoculars, head scales very strongly keeled, erect, very rough in profile; pit surrounded by 1 large preocular which enters eye, a large loreal which is broken up below into one or two small divisions, and another small scale below preocular which does not enter eye, upper preocular enters eye, 8 upper labials, none entering pit or reaching suboculars, second and third largest, separated from subocular by a row of scales, temporals not enlarged 8 lower labials, first pair minutely in contact behind mental; first pair of chin shields largest, longer than wide, followed by 3 pairs of smaller scales; scales in 19 rows on neck and on middle of body; ventrals, 132, anal single; subcaudals, 49, tail prehensile.

Color —Above, greenish with 56 darker transverse bars composed of dark black background, each scale with a green center, these bars are two or three scales wide dorsally and extend about halfway down on side where they continue as a very thin zigzag line crossing ventral surface, but rarely meeting, bars

almost join each other on neck dorsally, they are more distinct on latter third of body, and merge into each other again on tail; darker scales on head edged with black; no streak behind eye, a suggestion of black around labials

Measurements of Trimeresurus philippensis Gray

	mm.
Total length	450
Length of head	22
Diameter of eye	4
Eye to end of snout	8
Head between eyes	14

Remarks—Only this single specimen has been seen and, unfortunately, the locality is not known. The specimen is in the Santo Tomás Museum, Manila. This species is very probably identical with *Tropidolaemus hombroni* Guichenot from western Mindanao

TRIMERESURUS WAGLERI (Boie)

Cophias wagleri Boie, Isis (1827) 561

Trigonocephalus wagleri Schlegel Phys Serp 2 (1837) 542, pl 19, figs 16–18

Trimeresurus maculatus Gray, Zool Misc (1842) 48, Cat Vip Snakes (1849) 8, Motley and Dillwyn, Nat Hist Labuan (1855) 43.

Trimesurus subannulatus Gray, Zool Misc (1842) 48, Cat Vip Snakes (1849) 9, Motley and Dillwyn, Nat Hist Labuan (1855) 44

Trimesurus sumatranus (non Raffles) Gray, Zool Misc (1842) 48, Cat Vip Snakes (1849) 10

Trigonocephalus sumatranus Cantor, Cat Mal Rept (1847) 121, pl 40, fig 9

Trimesurus formosus (non Schlegel) Gray, Cat Vip Snakes (1842) 10

Tropidolæmus wagleri Duméril and Bibron, Erp Gén 7 (1854) 1524, F Muller, Verh Nat Ges Basel 7 (1883) 290

Trigonocephalus hombroni Jan, Rev & Mag Zool (1859) 155

Tropidolaemus subannulatus Peters, Mon Berl Ak (1861) 691

Tropidolaemus philippinensis Peters, Mon Berl Ak (1861) 691

Trimeresurus wagleri Gunther, Rept Brit India (1864) 388, Stoliczka, Journ As Soc Bengal 42 (1873) 126, Blanford, Proc Zool Soc London (1881) 224

Trimeresurus subannulatus immaculatus Peters, Ann Mus Genova 3 (1872) 42

Tropidolaemus subannulatus celebensis Peters Mon Berl Ak (1872) 584

Bothrops wagleri F Muller, Verh Nat Ges Basel 7 (1882) 155, Dr Jeude, Notes Leyden Mus 8 (1886) 41

Tropidolæmus (sp) F MULLER, Verh Nat Ges Basel 8 (1887) 281
Lachesis wagleri BOULENGER, Cat Snakes Brit Mus 3 (1896) 562
Trimeresurus wagleri GRIFFIN, Philip Journ Sci. § A 4 (1909) 601, § D 6 (1911) 267

Whether the Philippine specimens of *Trimeresurus wagleri* Boie (as understood in Boulenger's Catalogue) should be divided into further subspecies is a debatable question. Gray described two species, *Trimesurus subannulatus* and *Trimesurus philippensis*, from his Philippine material. Other writers have recognized certain of the forms as distinct species, others as subspecies, as a consequence we find *subannulatus*, *Tropidolaemus subannulatus* var. *maculatus*, and *T philippinensis*, recorded by Peters * from the Philippines, the first and last regarded as species, the other merely a variety of *subannulatus*. Boettger † in his list includes *hombroni*, *Trimeresurus philippinensis*, and *Trimeresurus wagleri*, placing the *Tropidolaemus subannulatus* and *Tropidolæmus maculatus* of Peters as synonyms of *Trimeresurus wagleri*. Boulenger ‡ has divided the species *Lachesis wagleri* into a series of varieties without naming them. The types of *Trimesurus subannulatus* Gray, are relegated to the *Cophias wagleri* group, the specimens were from the Philippines, the exact locality unknown In this same group are placed three specimens from Palawan, two from Mindanao, and three from Luzon

The types of *Trimesurus philippensis* Gray are placed in the group of *Tropidolaemus hombroni* Guichenot

For an understanding of the Philippine fauna I regard it as essential that the varieties of *Trimeresurus wagleri* Boie which exist in the Philippines be recognized as subspecies I have had at hand for study more than forty specimens; fifteen from Mindanao, sixteen from Palawan and Balabac, one from Negros, and eleven with localities uncertain In this lot I am able to recognize three distinct variations, in at least two of which the differentiating characters hold throughout fairly large series of specimens. *Trimesurus philippensis* of Gray is a distinct species

Key to the subspecies of Trimeresurus wagleri (Boie)

*a*¹ Ventrals, 139, subcaudals, 51, 12 scales between supraoculars, bars across body, 45 (average counts of 15 specimens), scales in 21 to 25 rows, keeled Bluish green barred above with narrow stripes of white and dark blue, 2 scales wide, ventrals edged with black and

* Mon Berl Ak (1861) 691
† Ber Senck Nat Ges (1886) 120
‡ Cat Snakes Brit Mus 3 (1896) 562

with rather large spots of bluish or black, a white and blue bar behind eye, tail brownish red Young green or green with very small spots of white and blue, or with bars of white and brownish Palawan and Balabac T w wagleri (Boie) (p 298)

a' Ventrals, 163, subcaudals, 50, 15 scales between supraoculars, scales, 23 rows, keeled, and slightly notched laterally Bluish-green, with 23 very narrow white stripes, 1 scale wide, the color extending on the ventrals, light bluish green below, a white line from point of snout to angle of jaw, tail whitish on tip

T w albovirdis Taylor (p 299)

a² Ventrals, 133, subcaudals, 45, 9 scales between eyes, head not narrowed in front as rapidly as in *wagleri*, labials usually in contact with subocular Above bluish to yellowish green with a series of 34 bands of greenish white and grayish black, 2 or 3 scales wide, a few narrow black lines across ventrals, a line behind eye Young, white, brownish stripes with brown spots usually present on head Mindanao T w subannulatus (Gray) (p 300)

TRIMERESURUS WAGLERI WAGLERI (Boie)

PLATE 37, FIG 4

Cophias wagleri BOIE, Isis (1827) 561

It is highly probable that all references to *Trimeresurus wagleri* (Boie) as occurring in Palawan should be referred to this subspecies

There is no necessity of a complete description of this subspecies; the following characteristics will enable one to distinguish the form.

Ventrals, 139, subcaudals, 51, scales between the supraoculars, 12, bars across body, 45 (these counts are the averages of fifteen specimens from Palawan and Balabac) The scale rows vary between 21 and 25

The coloration is usually bluish green barred above with narrow stripes of white and dark blue, 2 scales wide Ventrals edged with black and with rather large spots of bluish or black, a white and blue bar behind eye Tail brownish red

In young specimens the entire color above is green, or green with a very few white and blue spots Occasional specimens show bars of white and brownish

The species agrees in size and general color with the subspecies *T wagleri subannulatus* Gray It is not a rare snake in either Palawan or Balabac It probably does not occur anywhere in the Philippines save in the Palawan group and the Calamianes

TRIMERESURUS WAGLERI ALBOVIRIDIS Taylor

PLATE 37, FIG 2

Trimeresurus wagleri alboviridis TAYLOR, Philip Journ Sci § D 12 (1917) 366

Description of subspecies.—(From the type, No 432, E. H Taylor collection; collected in Isabela, Occidental Negros, September 12, 1915, by E. H. Taylor) (Young female) Head triangular, very distinct from neck, nearly one and a half times as long as wide; rostral about as wide as high, not visible from above, bordered behind by 2 enlarged internasals, latter narrowly in contact, being nearly separated by 3 small scales; nasal bordered above by internasal, 2 supranasals, and a postnasal folded over canthus rostralis, the dorsal part much larger than the lateral; nasal large, longer than wide, nostril pierced near anterior margin, bordered behind by postnasal and a number of small intercalated scales, 7 or 8 in number, completely separating nasal from loreal, and loreal from first labials, pit surrounded by median preocular and 2 loreals, anterior loreal much larger than posterior, in contact with second labial and 1 supralabial; 3 preoculars, the middle largest, the lower very small; 2 small subequal postoculars, a narrow, crescentic, elongate subocular, separated from labials by a series of supralabials; supraocular region covered by 4 enlarged scales, the supraocular somewhat longer than wide, this is bordered by another scale along its inner side, nearly as large; a third somewhat smaller scale joins these behind, and a fourth borders them in front; supraocular and the scale in front in contact with superior preocular; temporals subequal, about 4 lateral rows, upper labials 11 (10 on right side), third and fourth largest, first and second subequal in size; 12 lower labials, only 1 in contact with anterior pair of chin shields, latter large, followed by 3 smaller pairs, head scales above strongly keeled, 14 to 15 rows between supraocular scales, scales in 23 rows, faintly keeled, with a slight notch indicated on each side of scales; ventrals, 163, subcaudals, 50, anal entire.

Color in life—Above bluish green, growing yellowish green laterally and greenish white below; body crossed with 26 very narrow white lines, not continuing ventrally; tail barred laterally with narrow white and blackish lines; point of tail whitish, a slight line behind eye to angle of jaw, top of head more blue than green, side of head lighter green with no markings

Measurements of Trimeresurus wagleri alboviridis Taylor

	mm
Total length	370
Snout to vent	308
Tail	62

Remarks.—This form differs from all other subspecies of *Trimeresurus wagleri* in the very much higher average number of ventrals (29 more than the average, 24 more than any recorded Philippine form, and 10 more than any specimen reported in Boulenger's catalogue) The upper head scales are smaller, there being 5 or 6 more between the supraoculars than in other subspecies The small lateral notches in the scales are distinctive. I captured the type in the low mountains of Negros, in small bushes. This is the only specimen known.

TRIMERESURUS WAGLERI SUBANNULATUS (Gray)

PLATE 37, FIG 3

Trimesurus subannulatus GRAY, Zool Misc (1842) 48, Cat Vip Snakes (1849) 9

Description of subspecies.—Head very distinct from body, very broad, nearly as broad as long; snout short, rather broadened, with a prominent canthus rostralis; eye small; rostral a little higher than wide, visible from above as a mere line; bordered above by 2 rounding scales, forming a suture medially; nasal large, the nostril pierced near the middle of the scale which is bounded above by 3 small, rounding scales, subequal in size; these scales are without keels, including the 2 touching rostral, a large postnasal folded over canthus rostralis, its superior part longest; behind nasal, the loreal and a minute intercalated scale below touch the first labial, anterior loreal large, narrowly in contact with nasal, forming the anterior border of facial pit, in contact with first 2 labials, posterior border of pit bounded by second preocular and second small loreal, 3 preoculars, the median largest, the inferior very small, supraocular longer than diameter of eye, its inner margin irregular, in contact with superior pre- and postoculars, 2 small postoculars; a narrow, curved, elongate subocular borders eye behind and below, separated from labials by a series of small supralabials of unequal size; 2 small scales between third labial and loreals, 9 upper labials, third, fourth, and first largest in the order named; edges of labials bordering mouth form a wavy line, 10 lower labials, mental wider than rostral, about as deep; 1 large pair of chin shields followed by 3 smaller paired scales, 2 labials in contact with first pair of chin shields; temporals numerous, 4 or 5 lateral

rows, those bordering labials largest, head scales on snout larger than those between eyes, all strongly keeled save those that border canthus rostralis, scales between supraoculars 9 or 10, from last lower labials to first ventral, 9 rows of scales; scales on chin and throat large, wider than deep, scales on body in 23 rows, all keeled; outer row largest, pupil vertical; ventrals, 131, anal entire; subcaudals, 43.

Color in life.—Dorsally a bright bluish green, with yellowish green to yellow laterally and ventrally, a series of bands on body, (21 on body, 13 on tail), these bands are composed of a greenish yellow stripe bordered by a black line of varying width; some of the bands are broken in the middle, below they connect with a narrow black line crossing ventrals; usually 1 or 2 black lines between ends of bars ventrally; ventrals are of varying shades of yellow to cream, all with a tinge of green, ventral lines are black, tail pinkish, the black bands not connected above or below; top of head variously spotted with black; a yellowish line runs from nasal through eye, and around angle of jaw, behind eye this is bordered below by a black band which continues the same distance, upper and lower labials yellow-green, some edged with black. Length, 655 millimeters; tail, 102

Variation.—In this form the chief variation is between the young and the adult. The black color is usually wanting and is usually replaced by brown or brown and lavender, the head is sometimes spotted, sometimes not The number of upper labials is almost constantly 9, with usually 10 lower labials; ventrals average 134, subcaudals, 45

Remarks.—Common in Mindanao These snakes were usually found in small trees in the forest Their coloration makes them very difficult to discern. They are deadly poisonous.

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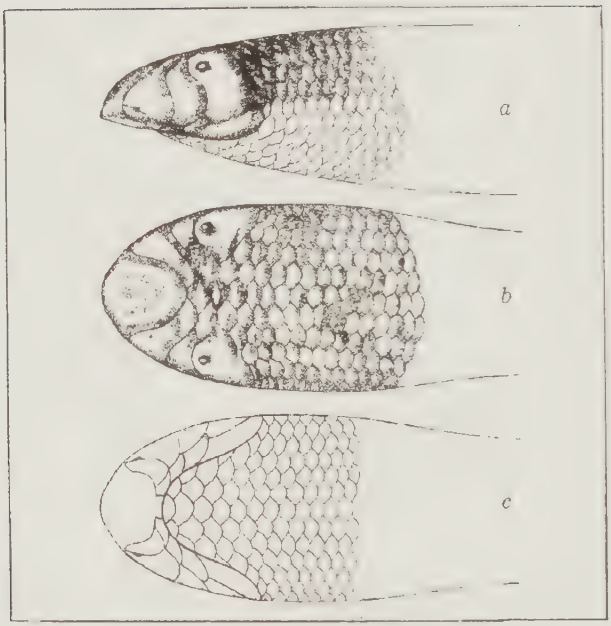

PLATE 1. TYPHLOPS LONGICAUDA TAYLOR.

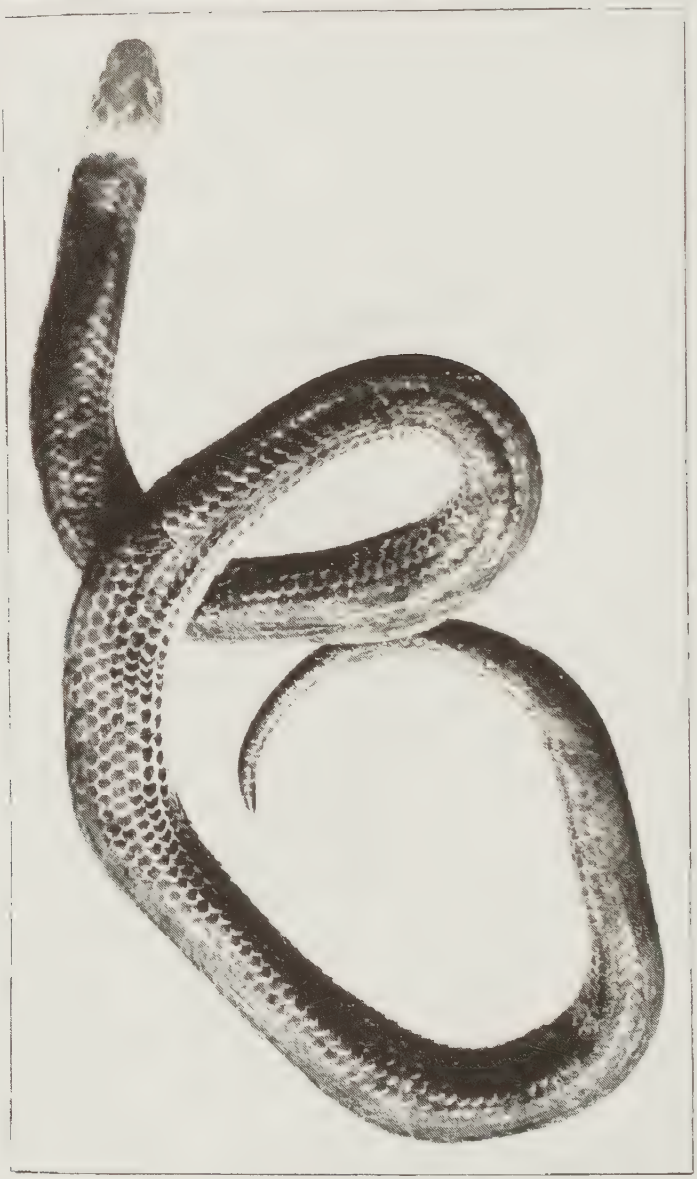

PLATE 2. XENOPELTIS UNICOLOR REINWARDT.

PLATE 3. PHILIPPINE SNAKES.

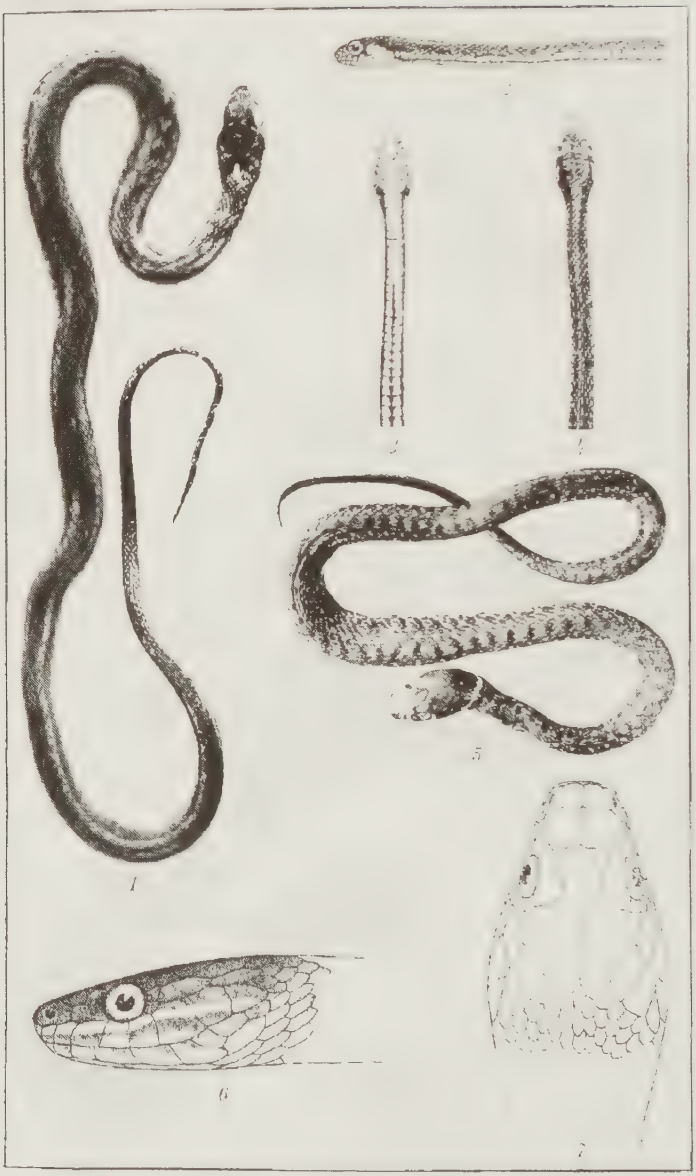

PLATE 4. PHILIPPINE SPECIES OF NATRIX.

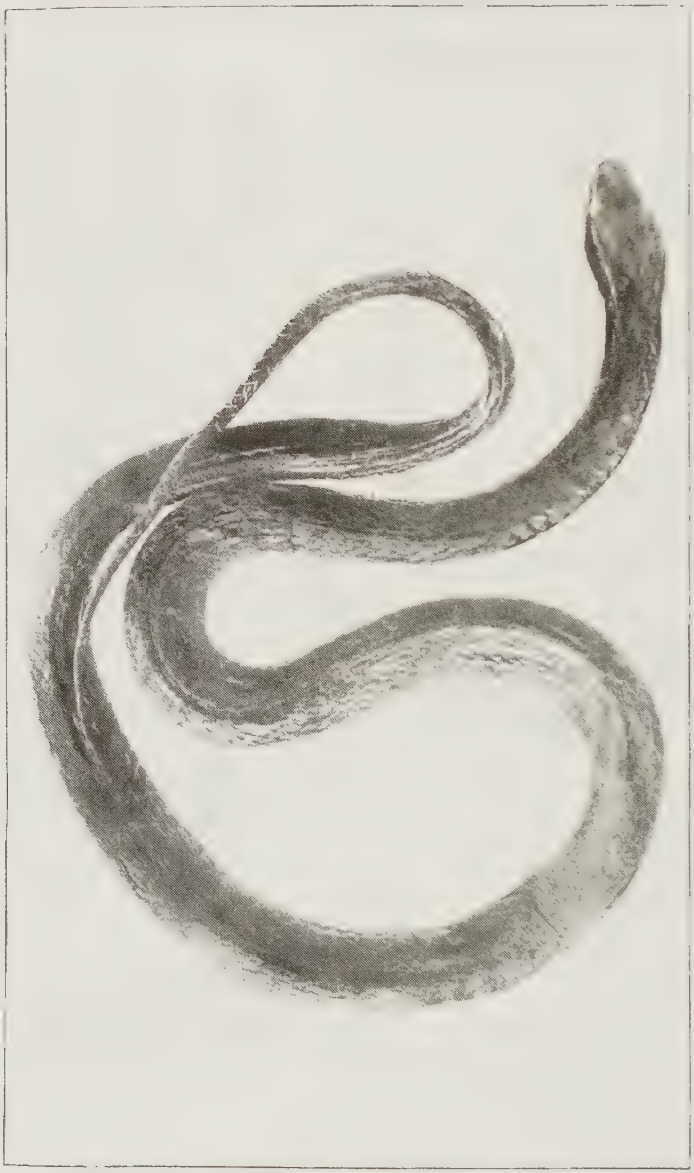

PLATE 5. NATRIX LINEATA (PETERS).

PLATE 6. PHILIPPINE SNAKES.

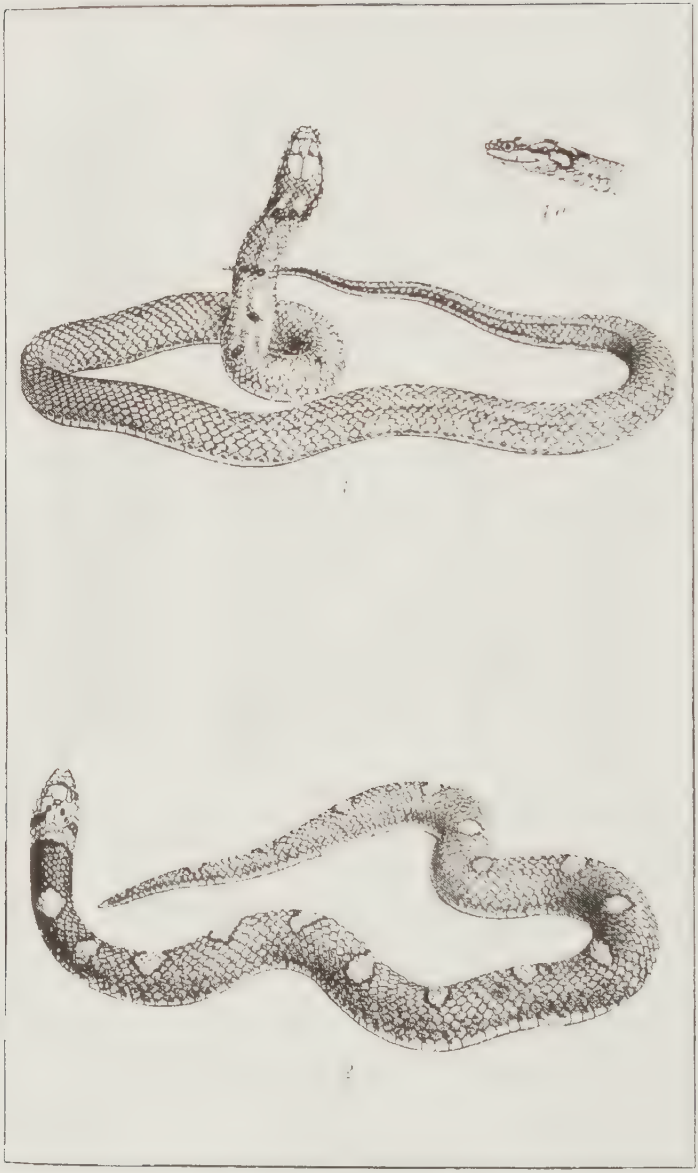

PLATE 7. PHILIPPINE SNAKES.

PLATE 8. OPHITES SUBCINCTUS (BOIE).

PLATE 9. HAPLONODON PHILIPPINENSIS GRIFFIN

PLATE 10. PHILIPPINE SNAKES.

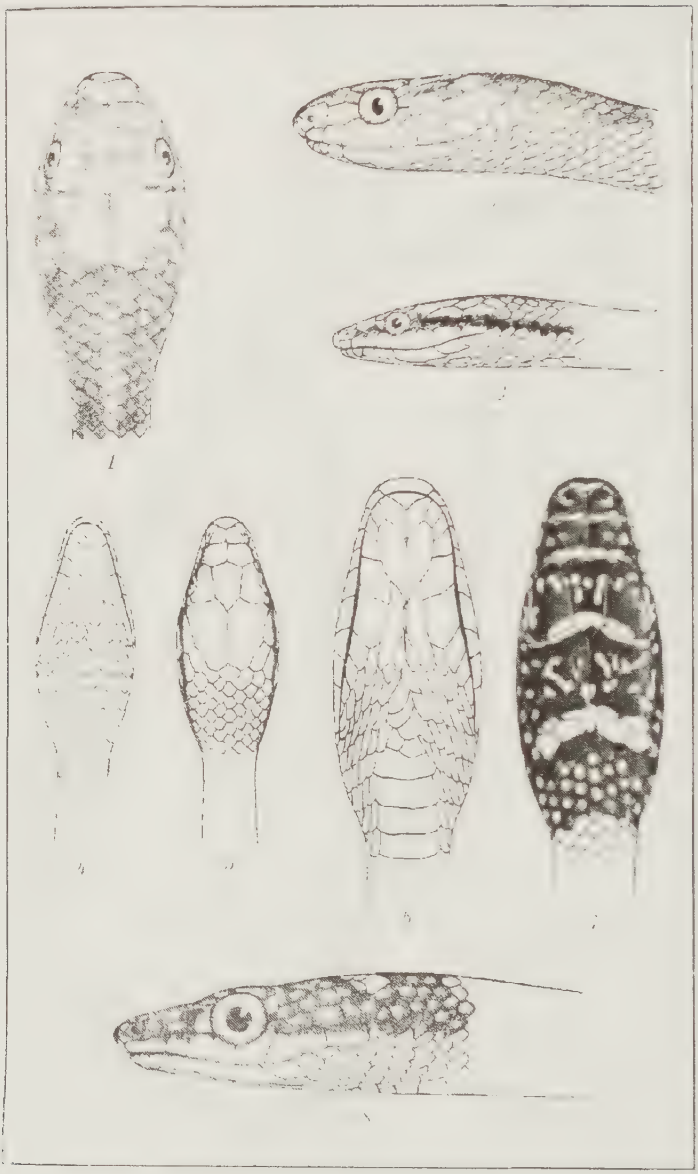

PLATE 11. PHILIPPINE SNAKES.

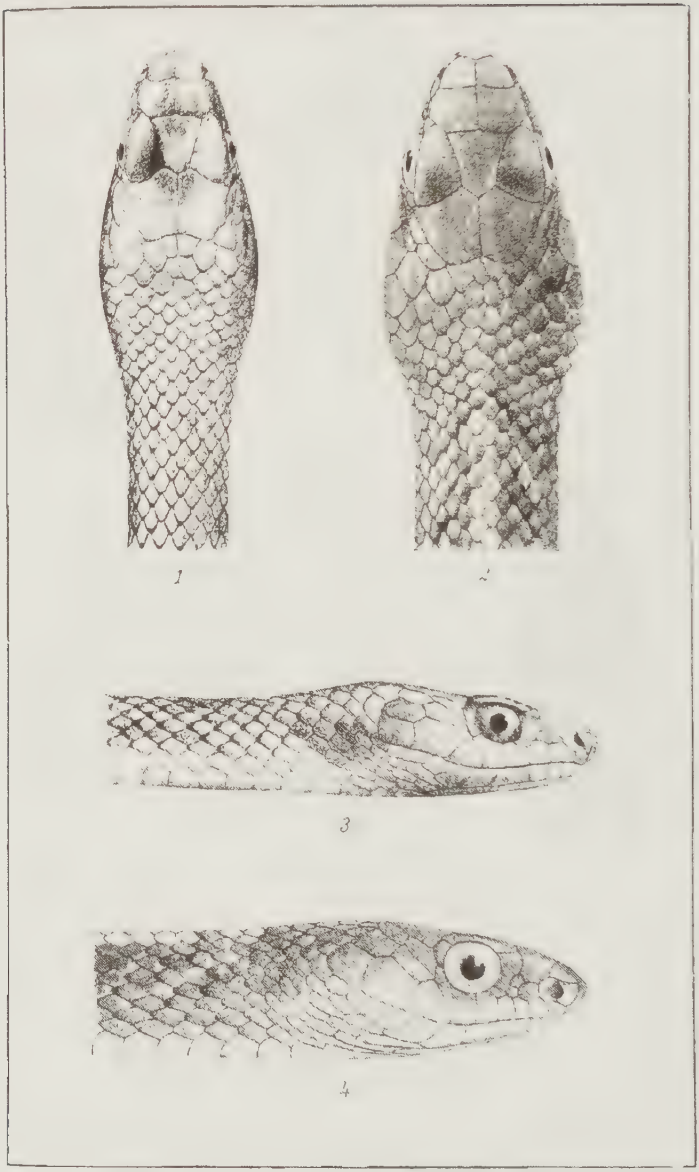

PLATE 12. PHILIPPINE SPECIES OF ZAOCYS.

PLATE 13. PHILIPPINE SNAKES.

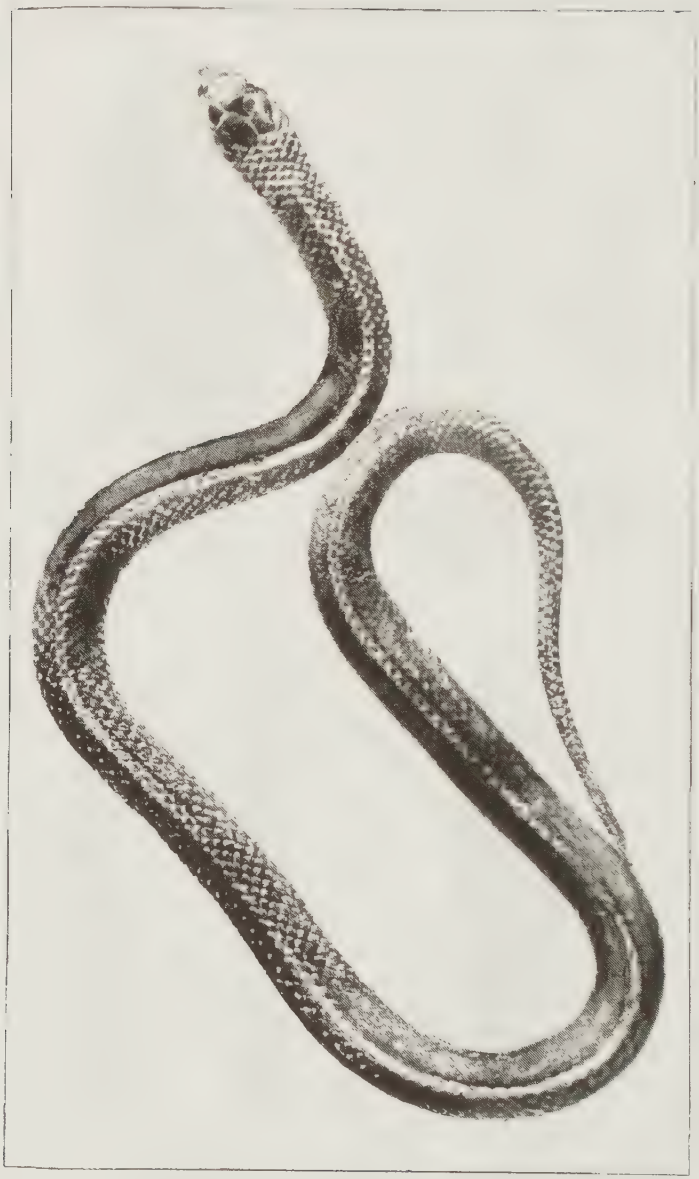

PLATE 14. HOLARCHUS MEYERINKII (STEINDACHNER).

PLATE 15. HOLARCHUS MACULATUS TAYLOR

PLATE 16. HOLARCHUS BURKSI TAYLOR

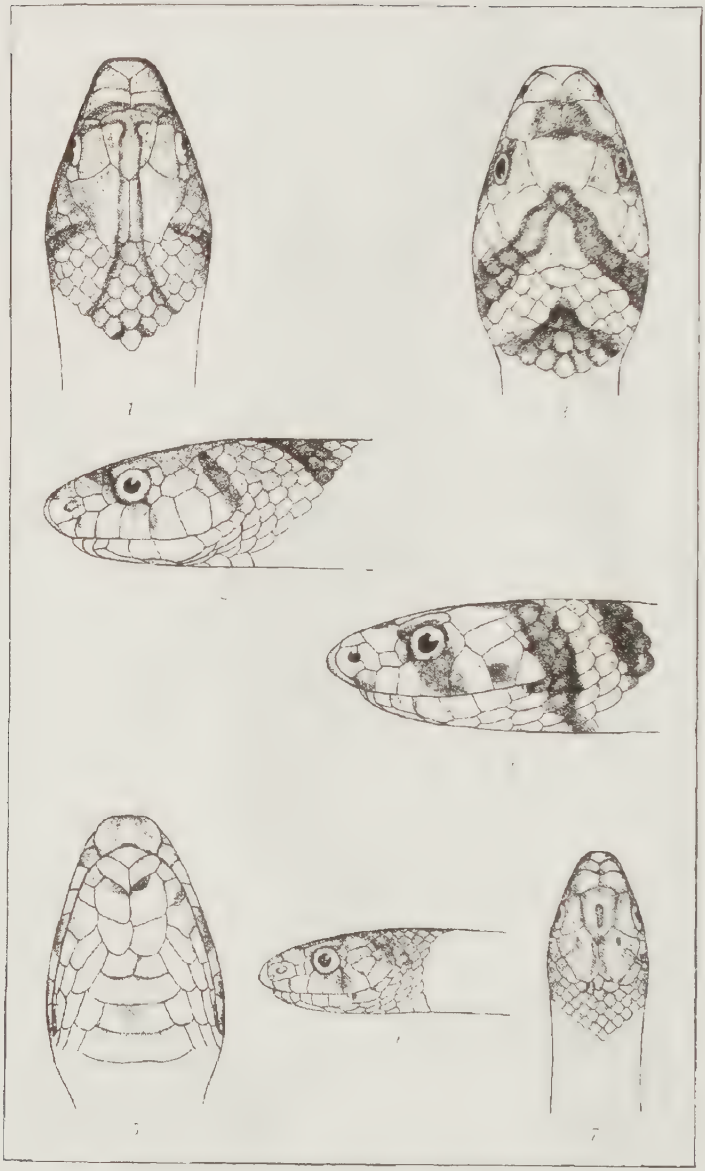

PLATE 17. PHILIPPINE SNAKES.

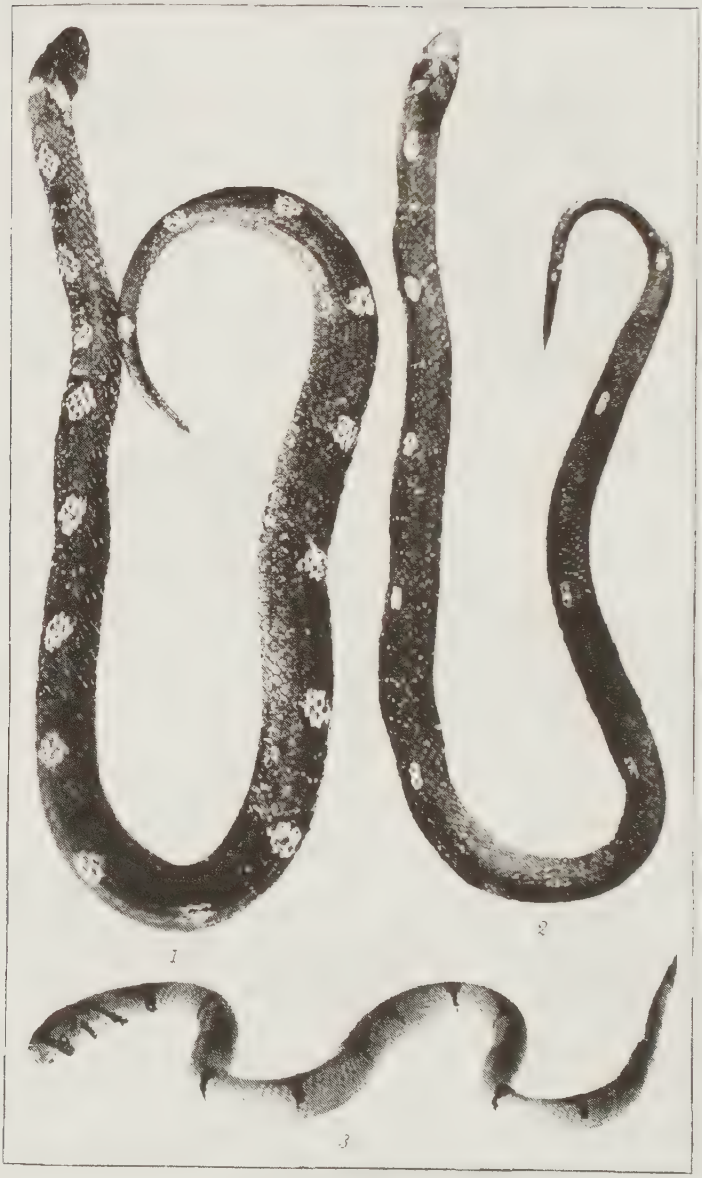

PLATE 18. PHILIPPINE SNAKES.

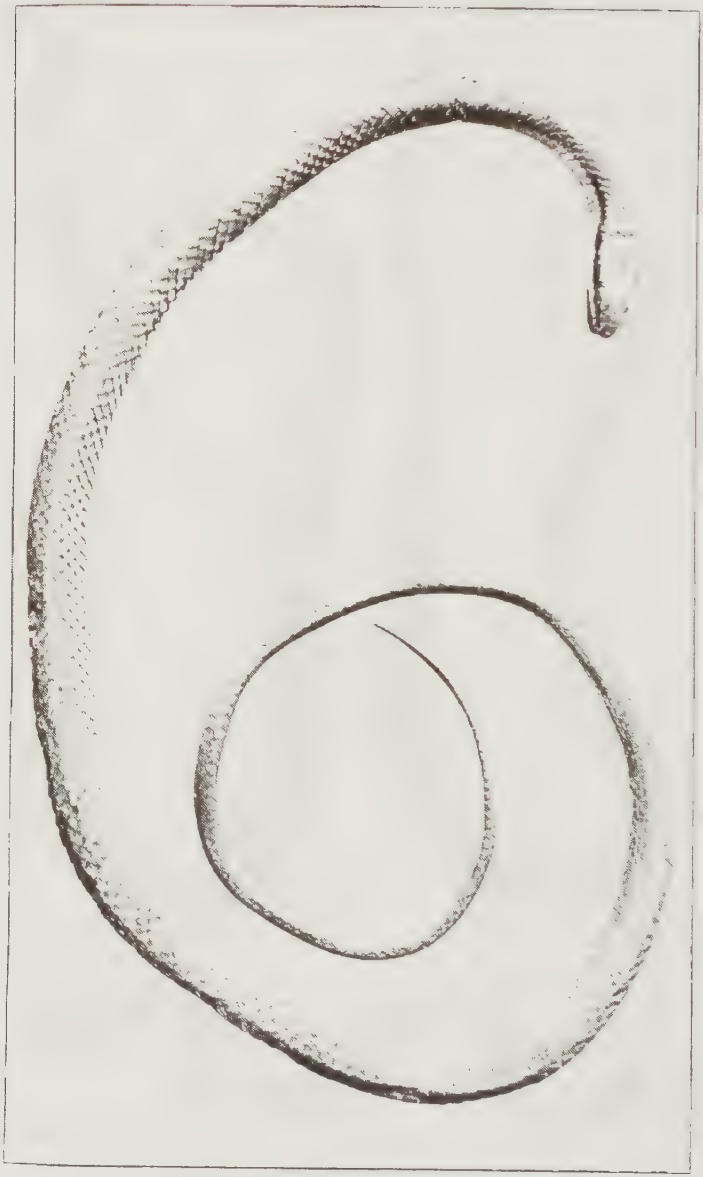

PLATE 19. LIOPELTIS TRICOLOR (SCHLEGEL).

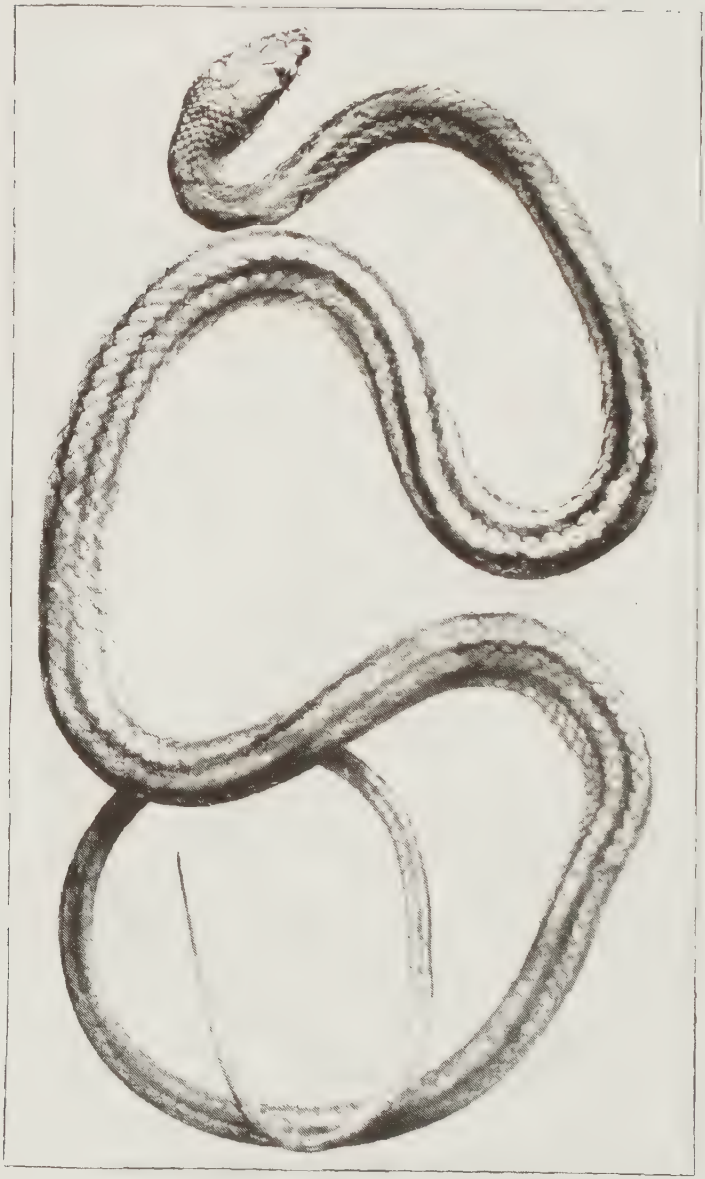

PLATE 20. LIOPELTIS PHILIPPINUS (BOETTGER).

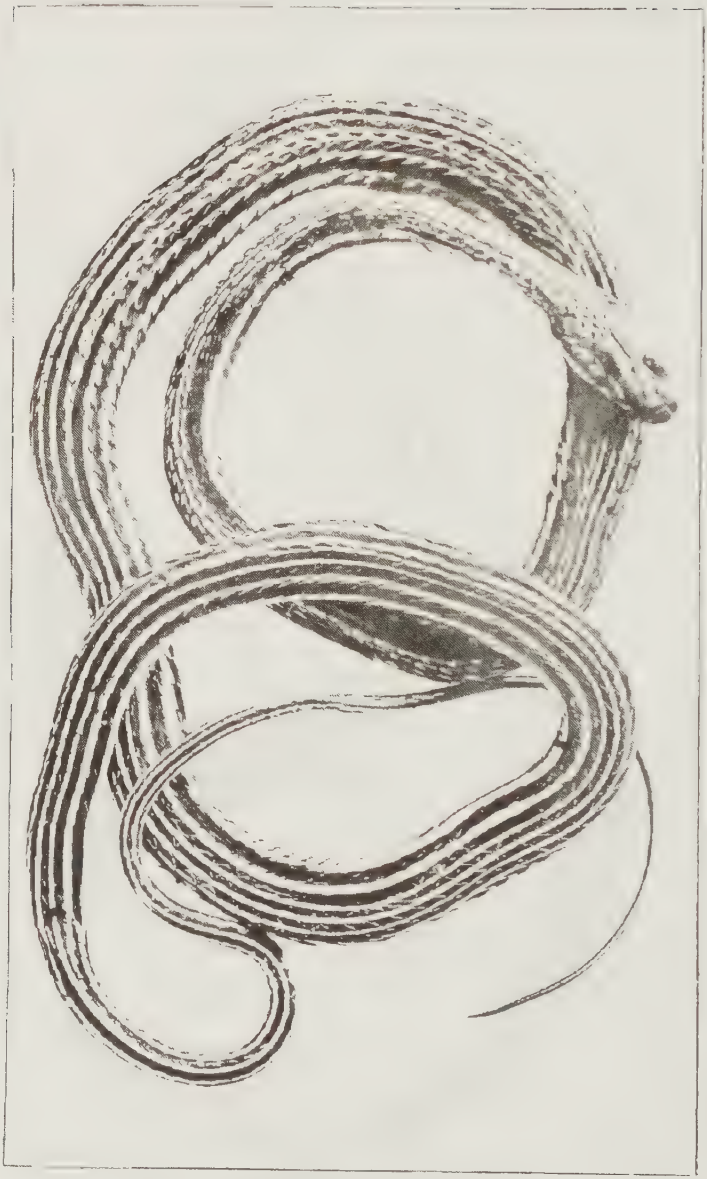

PLATE 21. DENDRELAPHIS CAUDOLINEATUS (GRAY).

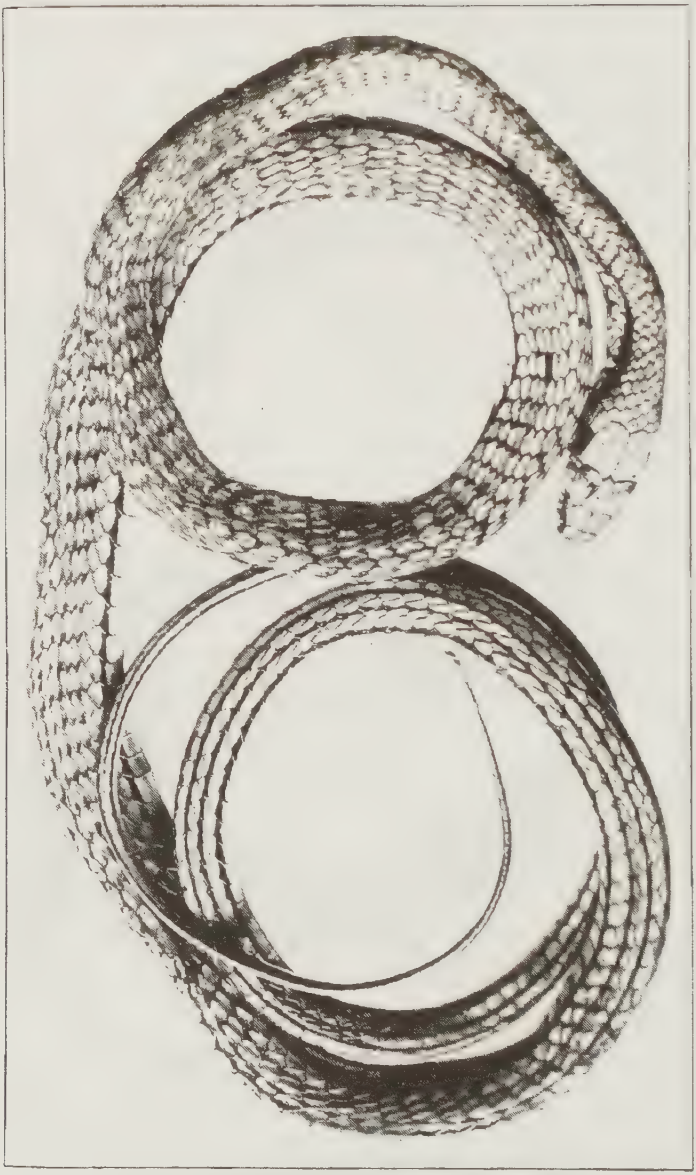

PLATE 22. DENDRELAPHIS TERRIFICUS (PETERS).

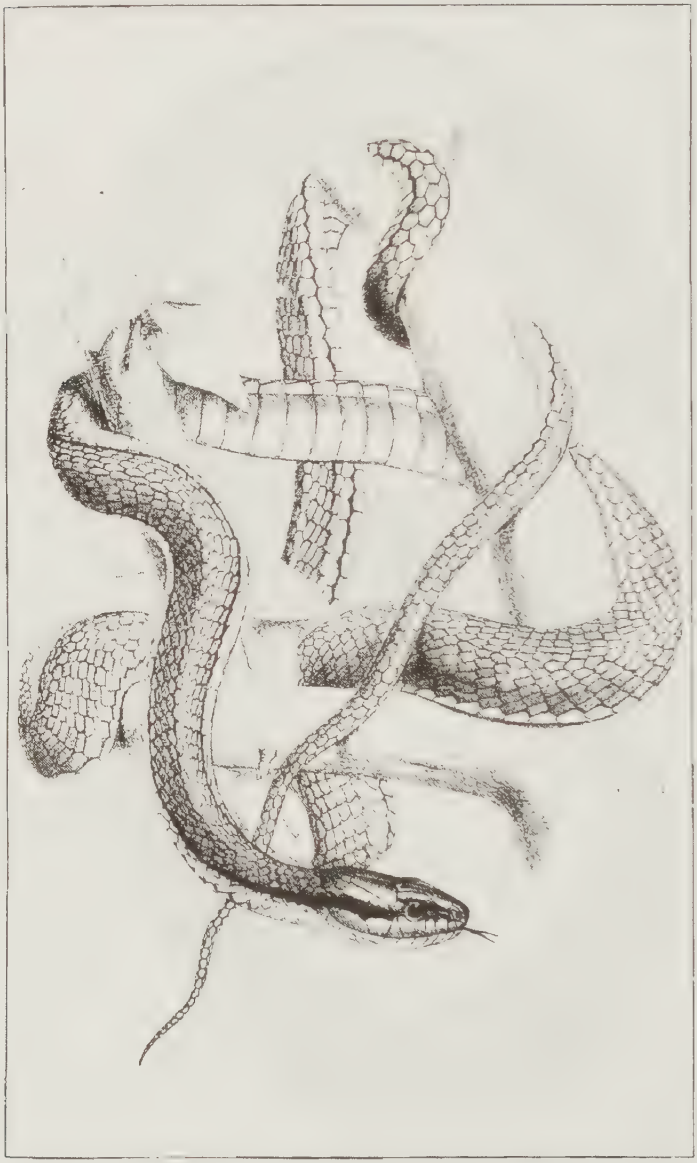

PLATE 23. DENDRELAPHIS TERRIFICUS (PETERS).

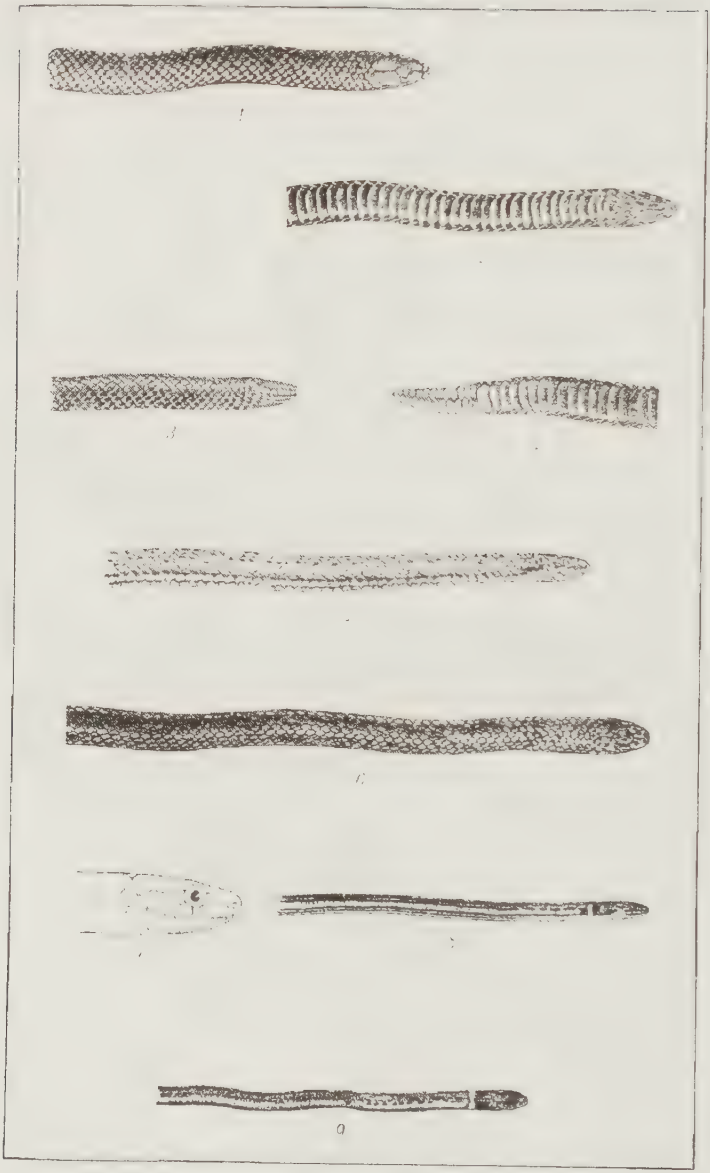

PLATE 24. PHILIPPINE SNAKES.

PLATE 25. BOIGA DENDROPHILA MULTICINCTA (BOULENGER).

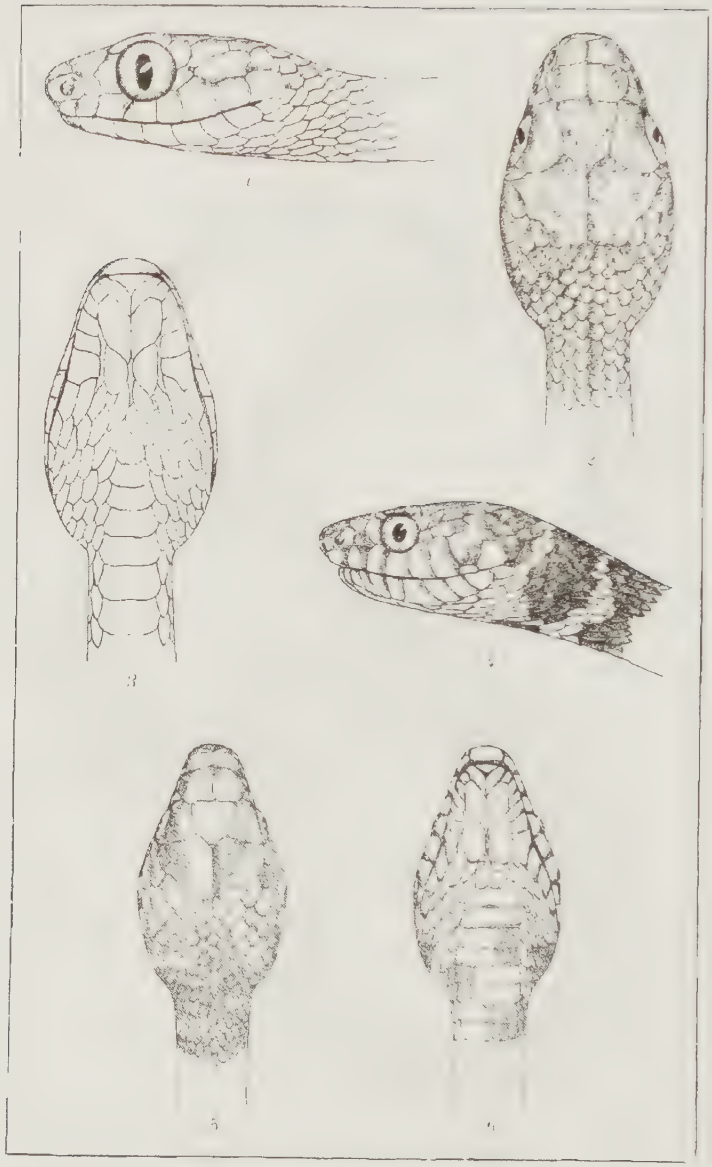

PLATE 26. PHILIPPINE SPECIES OF BOIGA.

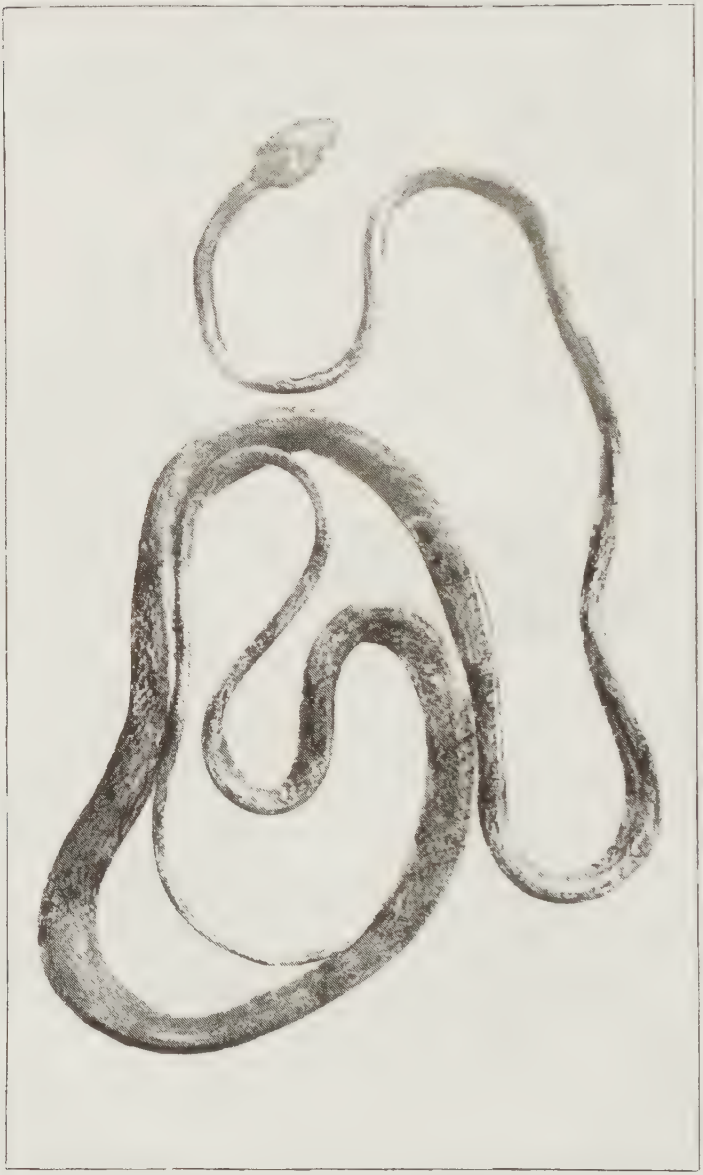

PLATE 27. BOIGA ANGULATA (PETERS).

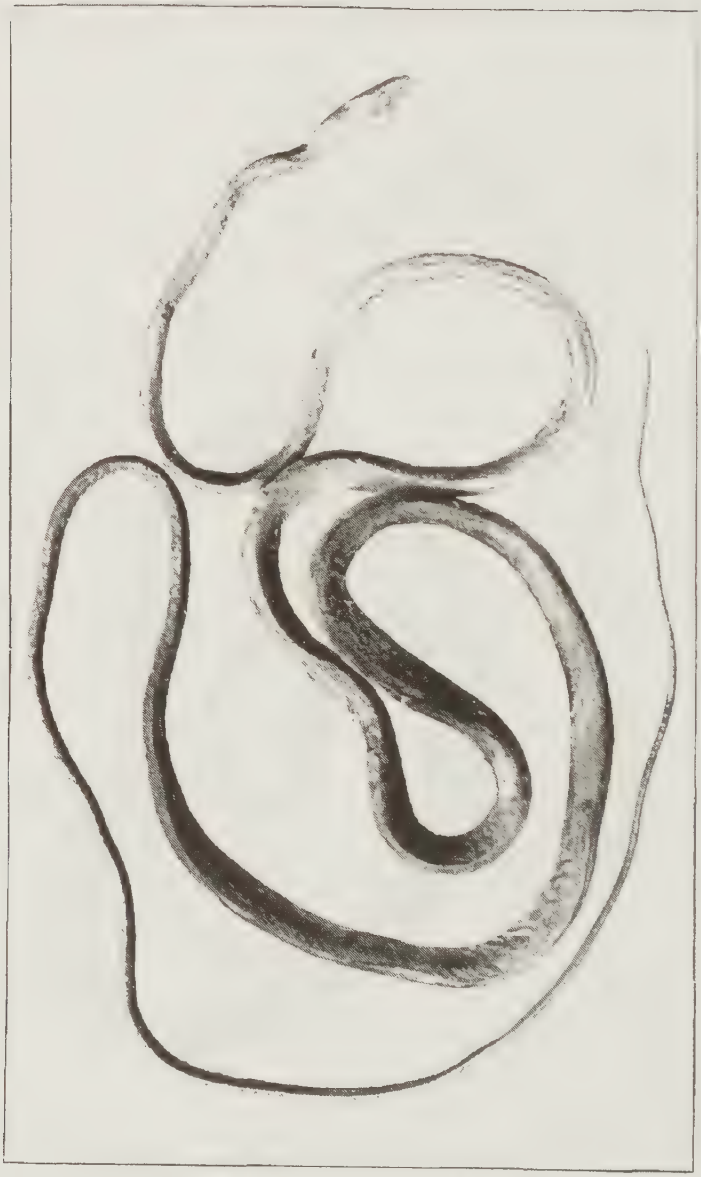

PLATE 28. DRYOPHIS PREOCULARIS SP. NOV.

PLATE 29. LATICAUDA COLUBRINA (SCHNEIDER).

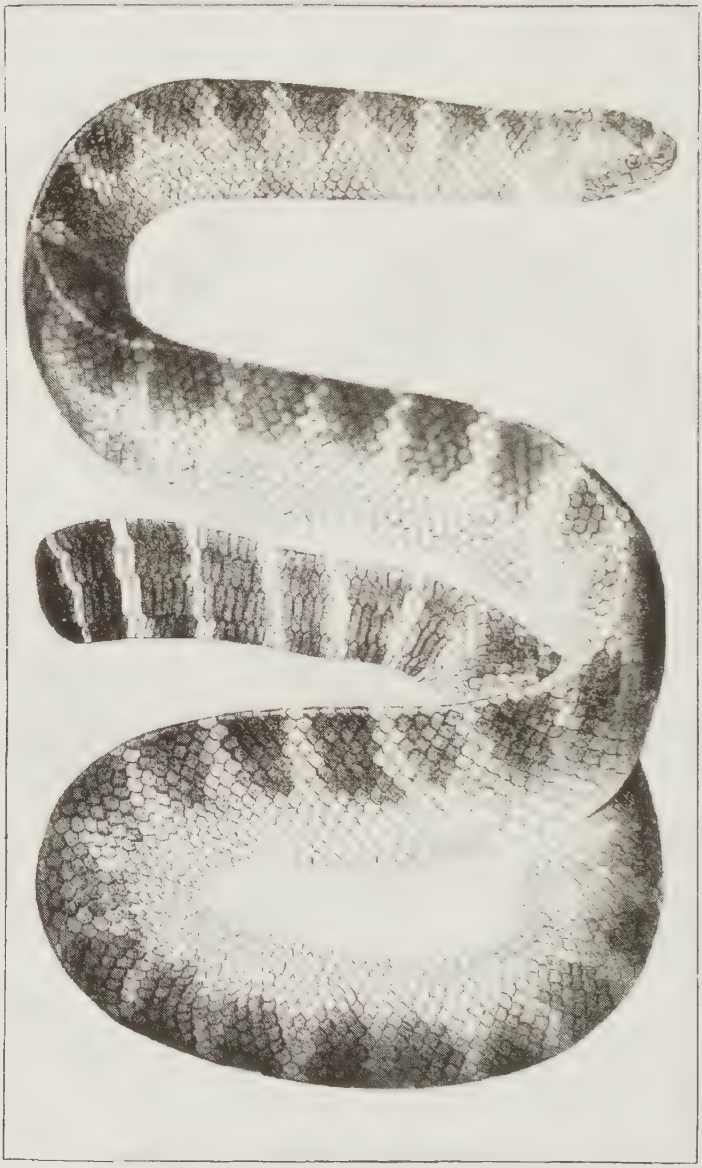

PLATE 30. LATICAUDA SEMIFASCIATA (REINWARDT).

PLATE 31. PHILIPPINE SNAKES.

PLATE 32. NAJA NAJA MIOLEPIS (BOULENGER).

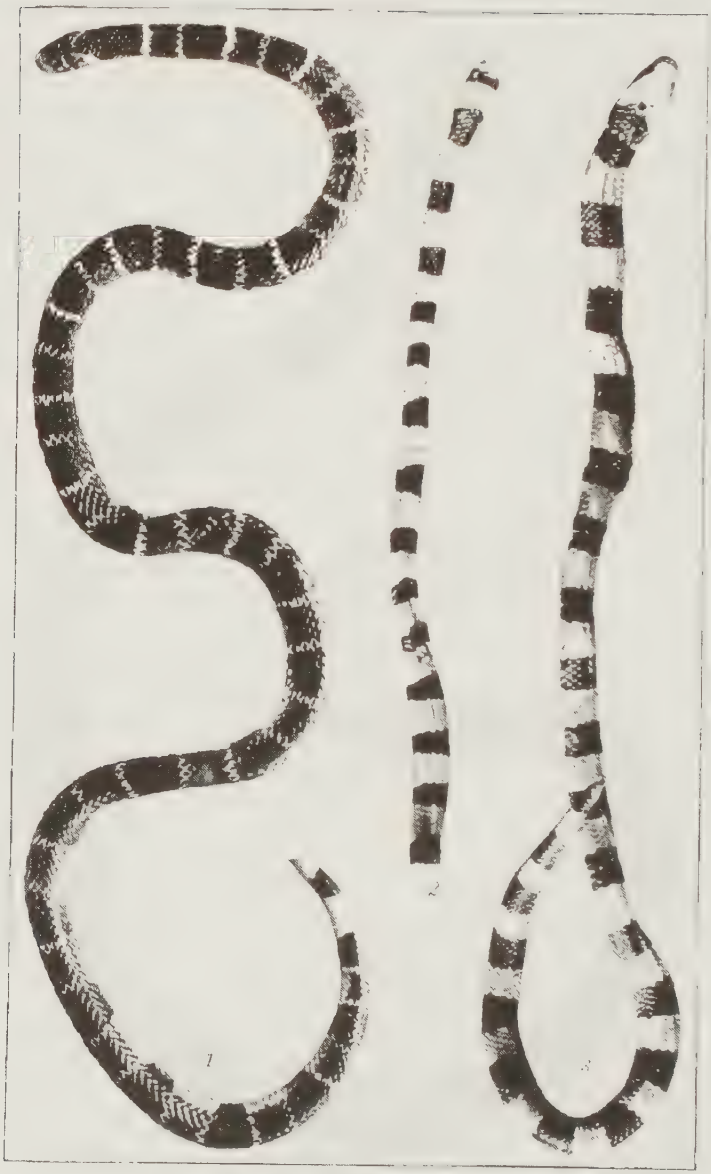

PLATE 33. PHILIPPINE SPECIES OF HEMIBUNGARUS.

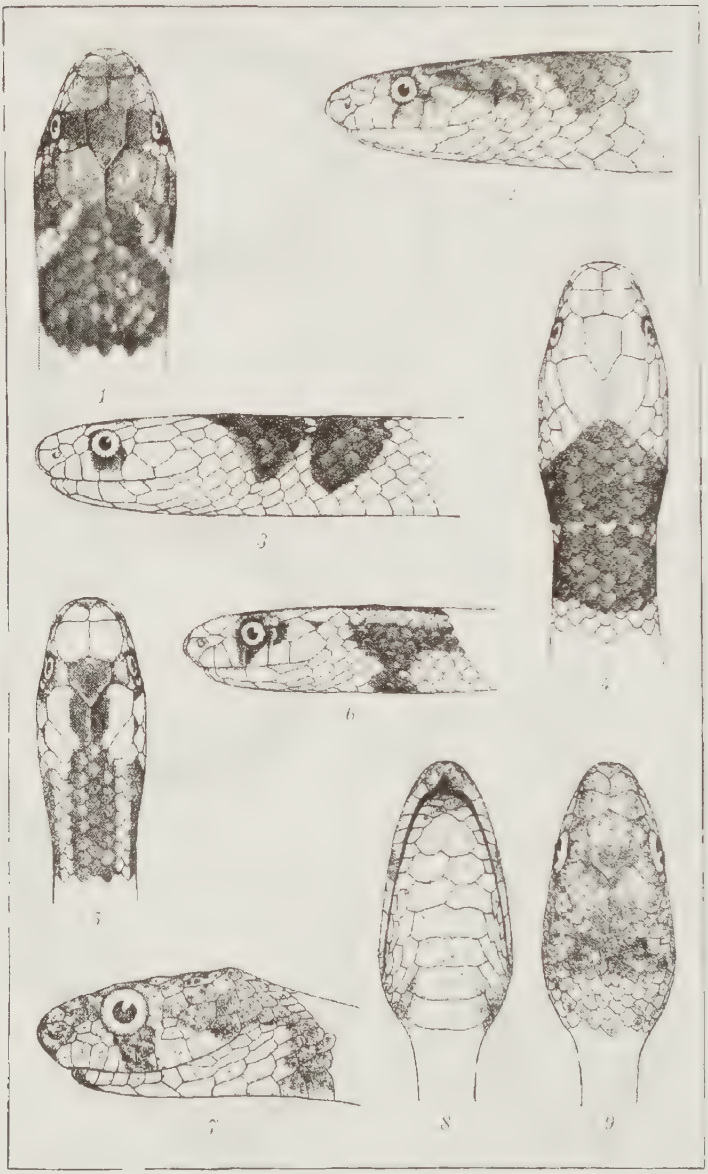

PLATE 34. PHILIPPINE SNAKES.

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PLATE 35. PHILIPPINE SPECIES OF DOLIOPHIS.

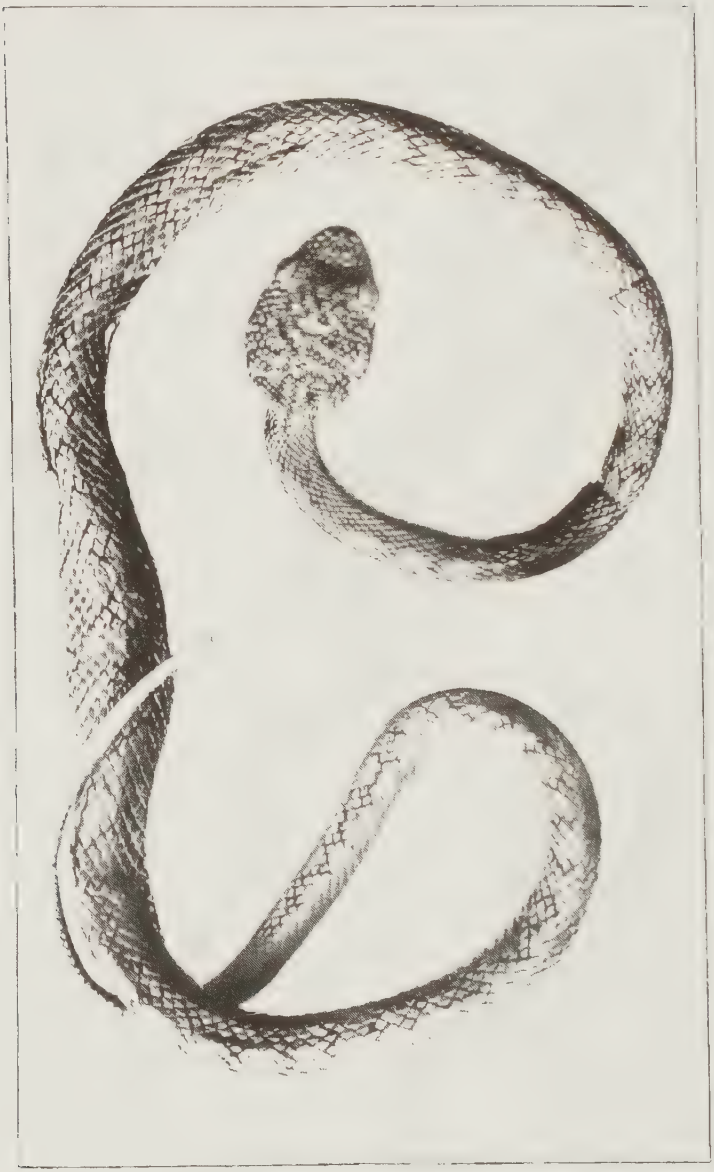

PLATE 36. TRIMERESURUS SCHULTZEI GRIFFIN.

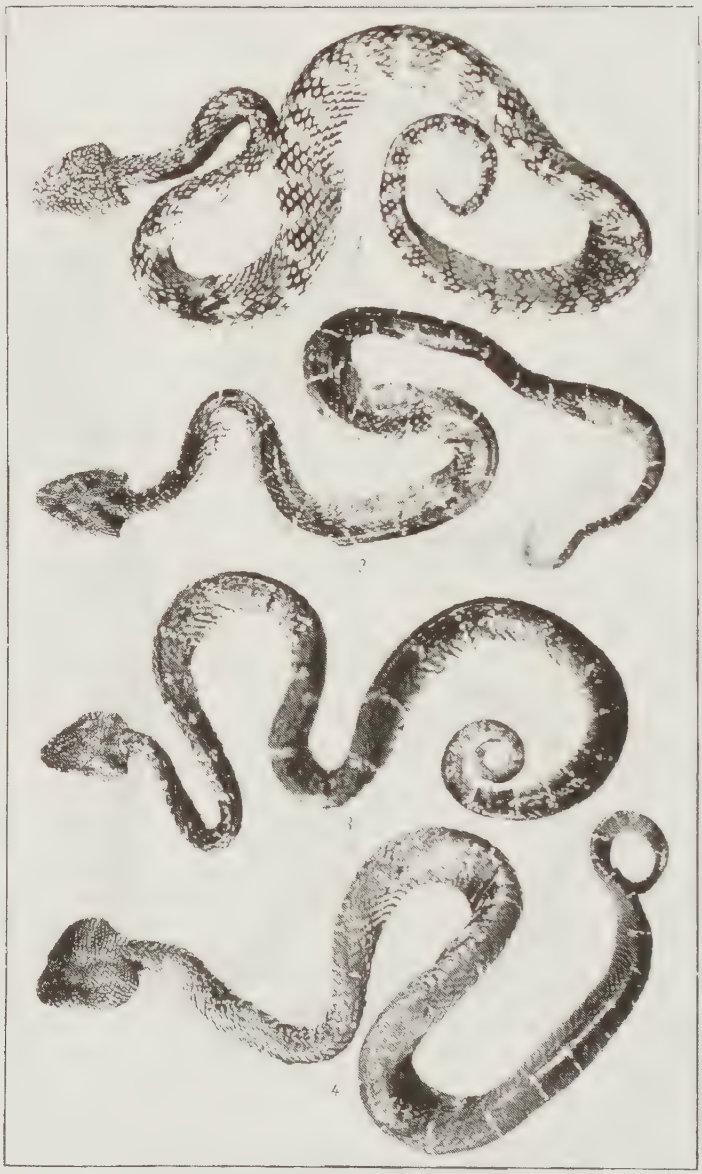

PLATE 37. PHILIPPINE SPECIES OF TRIMERESURUS.

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